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Plant License Renewal Subcommittee
Quad City Nuclear Power Station

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NUCLEAR REGULATORY COMMISSION

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MEETING

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

(ACRS)

PLANT LICENSE RENEWAL SUBCOMMITTEE

QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2

+ + + + +

WEDNESDAY

APRIL 14, 2004

+ + + + +

ROCKVILLE, MARYLAND

+ + + + +

The Subcommittee met at the Nuclear
Regulatory Commission, Two White Flint North, Room T-
2B3, 11545 Rockville Pike, at 12:30 p.m., Graham M.
Leitch, Chairman, presiding.

COMMITTEE MEMBERS:

GRAHAM M. LEITCH	Chairman
MARIO V. BONACA	Member
J. PETER FORD	Member
STEPHEN L. ROSEN	Member
WILLIAM J. SHACK	Member

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1 COMMITTEE MEMBERS: (continued)

2	JOHN D. SIEBER	Member
3	GRAHAM B. WALLIS	Member
4	JOHN J. BARTON	ACRS Consultant
5	MARVIN D. SYKES	ACRS Staff

7 NRC STAFF PRESENT:

8	HANS ASHAR
9	STEWART BAILEY
10	MAITRI BANERJEE
11	PEI-YING CHEN
12	KIMBERLEY CORP
13	GANESH CHERUVENKI
14	B. ELLIOT
15	TANYA FORD
16	G. GALLETT
17	MARK HARZZMAN
18	RAUL HERNANDEZ
19	JOHN HONCHARIK
20	NAEEM IQSAL
21	PETER J. KANH
22	T.J. KIM
23	THOMAS KOSHY
24	P.T. KUO
25	ARNOLD LEE

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1 NRC STAFF PRESENT: (continued)
2 SAM LEE
3 CAROLYN LEWIN
4 CHANG-YANG LI
5 Y.C. (RENEE) LI
6 TILDA LIU
7 JOHN S. MA
8 GREG MAKAR
9 AMAR PAL
10 PAT PATNAIK
11 J. RAYAR
12 ERIC REINHOLT
13 L. ROSSBACH
14 DAVID SHUM
15 JIM STRNISHA
16 ANGELO STUBBS
17 RAM SUBBARATKAR
18 GREGORY SUBER
19 DAVID TERAQ
20 A. VEGEL
21 CHENG-JHI WU
22
23
24
25

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P R O C E E D I N G S

Time: 12:28 p.m.

CHAIRMAN LEITCH: Good afternoon. I would like to call this meeting to order. This is a meeting of the Plant License Renewal Subcommittee. I am Graham Leitch, Chairman of the Plant License Renewal Subcommittee.

The members in attendance are Jack Sieber and Peter Ford and Stephen Rosen. We will be joined by two other members, Mario Bonaca and Graham Wallis shortly. We also have with us an ACRS Consultant, Mr. John Barton, who is present, and Marvin Sykes of the ACRS staff is the designated Federal official for this meeting.

The purpose of this meeting is to discuss the license renewal application for the Dresden and Quad Cities Nuclear Power Plants. We will hear presentations from the NRC's Office of Nuclear Reactor Regulation and presentations of Exelon Generating Company.

The Subcommittee will gather information, analyze relevant issues and facts, and formulate proposed positions and actions as appropriate for deliberation by the full Committee.

The rules for participation in today's

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1 meeting have been announced as part of the notice of
2 this meeting, previously published in the Federal
3 Register on March 23, 2004. We have received no
4 written comments or requests for time to make oral
5 presentations from members of the public regarding
6 today's meeting.

7 A transcript of the meeting is being kept,
8 and will be made available, as stated in the Federal
9 Register notice. Therefore, we request that
10 participants in this meeting use the microphones
11 located throughout the meeting room when addressing
12 the Subcommittee. The participants should also first
13 identify themselves and speak with sufficient clarity
14 and volume so that they can be readily heard.

15 I would now like to call on Dr. Ford who
16 has a brief comment to make.

17 DR. FORD: I am a G.E. retiree and,
18 therefore, have a conflict of interest on G.E.
19 Services related matters.

20 CHAIRMAN LEITCH: Thank you, Dr. Ford.

21 We will now proceed with the meeting. I
22 don't see --

23 MR. LEE: This is Sam Lee. I am the
24 Section Chief.

25 CHAIRMAN LEITCH: Sam, would you have some

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1 introductory remarks for us?

2 MR. LEE: P.T. Kuo is supposed to be here.
3 I guess he probably got caught on the way from the
4 first meeting to over here. We are happy to be here
5 to present you with the results of this topic. We
6 will be addressing Quad Cities license renewal
7 application, and T.J. Kim is the Project Manager. He
8 will lead the staff presentation, and Kimberley Corp -
9 - she is assisting T.J., and she will make the
10 presentation on Chapter 4, TLAA, of the application.

11 We also have Region III. Laura Kozak is
12 the team leader on the inspection, and she will make
13 the presentation today of the inspections. With that,
14 we will turn over to Mr. Bohlke.

15 MR. BOHLKE: Thank you, Mr. Chairman,
16 members of the Subcommittee. I am Bill Bohlke, a
17 Senior Vice President with Exelon Nuclear. The
18 principal speakers today, seated to my left, are at
19 the far end of the table, Fred Polaski, our Manager of
20 License Renewal for Exelon, and Rob Stachniak, who is
21 the Project Engineer for the Dresden and Quad Cities
22 license renewal project.

23 Also with us today is Jim Meister, who is
24 the Vice President of Nuclear Services, as well as
25 other members of the corporate staff at Cantera who

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1 have supported this license renewal application, and
2 two representatives, one each from Quad Cities and
3 Dresden, who have also participated in this project.

4 We will start with a pretty high level
5 overview, and then work successively lower in detail
6 as we work through the agenda. The agenda is on page
7 2, and you can all read that, and I won't.

8 On page 3, a little timeline: We
9 submitted the combined license renewal application for
10 Dresden and Quad Cities about 15 months ago, early in
11 January 2003. In November and December of this year,
12 we received the supplemental environmental impact
13 statements in draft form for Quad and Dresden
14 successively, and earlier this year the draft SER was
15 issued.

16 Although I am sure many of you are
17 familiar basically with the plants, I thought I would
18 just take a little time to bring us all to the same
19 level of understanding here of both BWR-3, Mark-1
20 containments. They are both fresh water cooled, Quad
21 from the Mississippi, and I will show you a picture of
22 that shortly, and Dresden alternatively from a cooling
23 lake or from the Kankakee/Illinois River. Again, a
24 picture is worth a thousand words there.

25 As a result of the extended power uprate

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1 license application, we were granted the approval to
2 run a 2957 megawatts thermal. Our current license for
3 Dresden 2 expires in 2009, and Unit 3 expires in 2011,
4 while the Quad Cities license expire shortly
5 thereafter in 2012. As you know --

6 CHAIRMAN LEITCH: Bill, I had a question
7 about the Quad Cities. I noticed that in some of the
8 literature we received, it listed exactly the same
9 date for Quad Cities 1 and 2. I was wondering, is
10 that correct? Were both licenses issued at the same
11 date or is that something that has crept -- an error
12 that has crept into the process?

13 MR. BOHLKE: I believe the answer is yes.

14 CHAIRMAN LEITCH: Okay. Unusual, but
15 fine.

16 MR. BOHLKE: Or lucky. Didn't have to do
17 it twice.

18 The full Committee and appropriate
19 subcommittees, of course, have reviewed the extended
20 power uprate license application which were granted in
21 2001, and the uprates were accomplished in 2001 and
22 2002, and we will be talking about that in a little
23 more detail later.

24 Slide 5 is a shot of the Dresden power
25 station. In this view we are looking north, and that

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1 is the Illinois River. The Kankakee and the DePlaines
2 form just upstream to form the Illinois River.

3 This is the Unit 1 containment, Unit 1
4 turbine building. This is the Unit 2 and 3 reactor
5 building, the Unit 2 and 3 turbine building, the 345KB
6 switchhouse.

7 Now most of the year, with the exception
8 of the summer, Dresden operates on a closed loop
9 system with a cooling lake. The lake is down here.
10 So you can't see it, but here is the hot canal going
11 out to the lake, and this is a return canal from the
12 lake.

13 During the summer months, we operate on
14 indirect cycle. We take cold water from the Kankakee
15 over here, bring it into the plant, discharge it, run
16 it through the lake, back through the cold canal and
17 out to the Illinois.

18 In 1999-2000 time period we began adding
19 cooling towers. The reason we did that was we were
20 taking severe down-powers during summer months when we
21 were running both units at full power. That had
22 historically, as many of you may remember, not
23 necessarily been having a problem at Com Ed. Once the
24 units started running dependably, the lake
25 constraints, lake temperature constraints, became an

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1 issue for us. So we added cooling towers.

2 Here we are showing two on the hot canal.
3 There has since been one added here for a total of
4 three banks of towers, and one for the cold canal.
5 The cold canal towers are principally to limit the
6 discharge temperature to the river when we are on
7 indirect open cycle. The hot canal towers do most of
8 the work.

9 The training building is over here.
10 Graham, you were asking earlier about the simulator.
11 The simulator is located in this training building.

12 CHAIRMAN LEITCH: I see. Thank you.

13 MR. BOHLKE: Next slide, please.

14 DR. ROSEN: Is this where the simulator
15 has been since Day One?

16 MR. BOHLKE: The simulator used to be over
17 at the Morris facility at GE. When we built the
18 training buildings at all of our sites except
19 Braidwood, we moved the simulators into the training
20 buildings.

21 This is Quad Cities' site on the
22 Mississippi River. This is looking eastward so that
23 you can see that the layouts or configurations of the
24 reactor building and turbine building are very similar
25 to what you saw at Dresden, just looking at the

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1 reverse. So here is the turbine building, reactor
2 building.

3 The inlet from the river comes to the crib
4 house, and it is, once through, discharged into this
5 pond and then through underground pipes out several
6 hundred feet offshore into the Mississippi River.

7 DR. ROSEN: What are those buildings on
8 the lower portion of the turbine buildings?

9 MR. BOHLKE: There?

10 DR. ROSEN: Yes. There are two, looks
11 like concrete buildings from the air, that one and the
12 one -- Yes, those two.

13 MR. BOHLKE: Mike, those are? Mike Hayes.

14 MR. HAYES: Those are transformers, I
15 believe.

16 MR. BOHLKE: He means these right here.

17 MR. FLICK: The area down there, we built
18 a LMTD building, which is the white one. Then we have
19 rad waste down there. We've got the two CCSTs. I'm
20 not sure from here exactly what building you are --

21 MR. BOHLKE: What is that building right
22 there?

23 MR. FLICK: Rad waste.

24 MR. BOHLKE: Rad waste.

25 DR. ROSEN: And the similar one for the

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1 other unit?

2 MR. BOHLKE: Yes.

3 DR. ROSEN: Those are rad waste buildings?

4 MR. BOHLKE: The switch rad is up here,
5 quite obviously. I failed to show you on Dresden --
6 We ought to go back just for a second. I wanted to
7 point out to you that the ISFSI for the Dresden units
8 is located here. Now move here. The ISFSI for Quad
9 Cities we expect to become operational in 2005, and it
10 will be located in this area.

11 DR. WALLIS: What did you say that was?

12 MR. BOHLKE: Independent spent fuel
13 storage installation, ISFSI. I'm sorry, I assumed you
14 all were with us on those little pieces of jargon.

15 Now you all probably remember back in the
16 Seventies that there was an attempt to have a cooling
17 canal for Quad Cities. That canal did a big loop
18 here. There used to be spray nozzles. That was
19 abandoned not terribly long after it started up, and
20 that body of water now exists as a fish hatchery.

21 CHAIRMAN LEITCH: Bill, could you go back
22 to the photograph of Dresden? I had a question about
23 the status of Dresden 1. I understand that it is
24 decommissioned and in safe store.

25 MR. BOHLKE: We are going to talk

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1 specifically about that when Rob makes his
2 presentation. And if we don't answer whatever
3 question you have, I'm sure you will bring it up.

4 CHAIRMAN LEITCH: Okay, good. We will
5 defer it until that time. Thanks.

6 MR. BOHLKE: Let's move on. On Slide 6 we
7 summarize the significant plant differences. As I
8 said earlier, both plants are BWR-3s, and both plants
9 are Mark I, but as was not unusual in the evolution of
10 the various BWR designs -- I'm sure Dr. Ford knows
11 this better than me -- there were changes within model
12 designators.

13 In this particular instance, Dresden was
14 the last of the isolation condensers. In Dresden both
15 units have the isolation condenser system. For Quad
16 Cities, the reactor core isolation cooling system was
17 provided. So that is one difference between the
18 plants.

19 Similarly, the Dresden configuration
20 combined features of the shutdown cooling system and
21 a low pressure cooling injection system, and all those
22 functions have been subsumed in Quad Cities in the
23 residual heat removal system. What we called the
24 containment water cooling system on Dresden is now
25 more commonly known, not only at Quad Cities but

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1 through the BWR fleet, as the RHR service water
2 system.

3 There are additional unique differences
4 when we talk about how the plants approach the
5 shutdown from a fire. For Appendix R at Dresden, we
6 have the high pressure coolant injection system
7 combined with the isolation condenser system for high
8 pressure injection cooldown.

9 Those functions are replaced at Quad
10 Cities by the high pressure coolant injection system
11 and reactor core isolation cooling system, but Quad
12 Cities uniquely added a safe shutdown makeup pump, I
13 believe, in the early 1980s which is configured to be
14 able to supply high pressure coolant, motor driven
15 pump to either unit. And a further difference is in
16 the exact form of the circulating water flow, as I
17 described earlier, and I don't think I need to spend
18 anymore time on that.

19 Slide 8 briefly summarizes the current
20 regulatory performance of the units. All of the
21 indicators, all the reactor oversight performance
22 indicators for Quad Cities are currently green, and
23 they are all green for Dresden with the exception of
24 HPCI unavailability, which dates back to a 2001 event.

25 If we continue on the present course, we

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1 expect to exit white for green later in the third
2 quarter of 2004.

3 DR. ROSEN: It's just the one event that
4 had a long unavailability, Bill?

5 MR. BOHLKE: Yes. That was the water
6 hammer event at Dresden 3 which went inadequately
7 diagnosed by the staff there, and it worked its way
8 through the process, and I believe it was identified
9 either in late 2002 or 2003 as a white finding.

10 CHAIRMAN LEITCH: But within the past
11 week, was there not also another HPCI unavailability
12 at Dresden, I think it was?

13 MR. BOHLKE: Yes. We are working through
14 the analysis of that event. You are absolutely right.

15 CHAIRMAN LEITCH: It sounded from the
16 early indications that a wire had been lifted at a
17 previous surveillance test and remained lifted until
18 this very recent surveillance test. Does that sound
19 right?

20 MR. BOHLKE: That is my top high level
21 understanding. Elliott Flick is here from Dresden
22 station. He will give us a little more detail on
23 that.

24 MR. FLICK: Hi. I am the engineering
25 director at Dresden, and the EES. We are still just

1 preliminarily into this. This happened two nights
2 ago, and a surveillance that took place approximately
3 a month ago there were two wires that were lifted. So
4 that particular function, which has to do with the
5 high and low level switches for the CST which would
6 automatically swap on a low level, or not -- Well, the
7 wires were lifted.

8 So we believe that the system was
9 inoperable. However, based on the wiring
10 configuration, it was available during that entire
11 time.

12 DR. ROSEN: But by lifted, you mean
13 disconnected?

14 MR. FLICK: Yes.

15 DR. ROSEN: But you have a procedure for
16 normally lifting wires during surveillance tests and
17 restoring them. Is that so? Is there a normal
18 procedure for handling that circumstance?

19 MR. FLICK: Yes, there are.

20 DR. ROSEN: It was not followed in this
21 case?

22 MR. BOHLKE: Yes, this was procedural
23 noncompliance, Mr. Rosen.

24 DR. ROSEN: This is not uncommon. So
25 there typically is a procedure that people follow, get

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1 the wire off, do the test, and re-land them.

2 MR. BOHLKE: You are right. Lifting leads
3 is a common procedure for performing surveillance at
4 many of the plants, if not all the plants in the U.S.
5 fleet, and it is controlled by procedure. This
6 appears to be a case of procedural noncompliance.

7 DR. WALLIS: You don't know if it was
8 still lifted? I would think that there would be an
9 indication.

10 MR. FLICK: The leads were actually found
11 lifted in the field.

12 DR. WALLIS: But you have to go and look
13 to find out? I would think that electrically you
14 would know.

15 MR. FLICK: When you perform the test.

16 DR. WALLIS: -- monitoring of the
17 continuity of the circuit or something.

18 MR. FLICK: Well, in this case, and while
19 we are just freshly working on the root cause analysis
20 to get to all of the causes, there were two different
21 work procedures that were taking place simultaneously,
22 one of which had lifted leads, the other one which was
23 completed; and there may have been some
24 miscommunications over which of the procedures was
25 actually completed, when that was returned to service.

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1 MR. BOHLKE: Elliott, I think the question
2 was: Was there an indication, either locally or in
3 the control room, which would have pointed the
4 operatives to the fact that we had a lifted lead?

5 MR. FLICK: No, there was not.

6 DR. WALLIS: I'm surprised. It all
7 depends on humans to do the job right? There is no
8 automatic check electrically?

9 MR. BOHLKE: In the design of these
10 plants, and in many others that followed, not all
11 lifted leads are indicated.

12 DR. WALLIS: I would think, if they are
13 important to safety, there would be an indication.

14 MR. BOHLKE: I won't deny that we've
15 gotten smarter, but the basic design didn't have that.

16 Slide 9 summarizes the plant performance
17 for the last five years, and I am not to go over each
18 of these numbers. But you can conclude that the
19 performance has been quite consistent and quite good
20 for both these units, both these stations, all four
21 units, over the last five years.

22 Re-shielding outage length has been at the
23 low end of the current industry experience, and the
24 radiation exposure for Dresden are in the middle of
25 the pack. The radiation exposures for Quad Cities are

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1 not in the middle of the pack. Quad Cities is a plant
2 which suffers from a high source term.

3 Starting last year, we put together a
4 rather aggressive program to identify and
5 systematically remove the source term, and completed
6 the first stage of that this spring in the Quad 2
7 outage where we replaced buckets in the last three
8 rows of blades. Those buckets contained a lot of
9 stellite material, which were adversely affecting our
10 source term.

11 In addition, there are other aspects that
12 we are working through but, of course, both plants,
13 all four units, use hydrogen water chemistry. So in
14 operations, those doses tend to be a little bit
15 higher.

16 CHAIRMAN LEITCH: The manual exposure on
17 the Quad Cities in 2002 -- was that mainly driven by
18 the steam dryer work?

19 MR. BOHLKE: Two things. First of all, if
20 you will notice the third line above that, and the
21 second line, where we have two outages per year in the
22 even years, we have since slid the units. They are
23 now on annual cycle. So the years that you have two
24 outages, you will have a higher dose. But
25 specifically in 2002, yes, the steam dryer work on

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1 Unit 2 did exacerbate that number.

2 CHAIRMAN LEITCH: Okay, thank you.

3 DR. BONACA: Well, what happened in '99 to
4 2000? You had two refueling outages in '99 and one in
5 2000.

6 MR. BOHLKE: Oh, between 1999 and 2000 on
7 the Dresden units is when we switched from 18-month to
8 24-month cycles, and that's why the timing is as it
9 is. They now -- So the Dresden units now refuel in
10 the early fall, and the Quad Cities units refuel in
11 the early spring.

12 DR. BONACA: That seemed as if one of the
13 units had a refueling in both months.

14 MR. BOHLKE: No, it was 18.

15 DR. BONACA: Oh, okay, I see what you
16 mean. So I understand.

17 DR. ROSEN: And what was the cause of the
18 very large radiation exposure in the year 2000 at
19 Quad? Is it two outages?

20 MR. BOHLKE: Two outages principally and
21 a high source term. I don't recall that -- There was
22 some weld overlay work, if I recall correctly. That
23 may have been a high dose test.

24 DR. ROSEN: And the same thing for 2002 or
25 did you already answer that?

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1 MR. BOHLKE: In 2002 is a combination of
2 the refueling outage doses plus the steam dryer
3 repair, and that's when we hit the peak exposures, I
4 believe, from refueling outages.

5 We had -- Quad Cities had historically
6 used decontamination of portions of the recirc system,
7 primary system, to try to lower the exposures. Once
8 we applied noble metal chemical addition, that option
9 wasn't available to us, and it is only this year that
10 we did a portion of a decon combined with a source
11 term reduction and then another noble metal chemical
12 addition to try to (a) remove radiation exposure
13 sources, but then recondition the piping to mitigate
14 stress corrosion cracking.

15 Moving on to Slide 10, the plants
16 underwent some fairly significant modifications,
17 principally balance of plant for the extended power
18 uprate. Again, I am not going to go down this list.
19 I would like to pick out two, I think, of some
20 particular interest.

21 As we prepared to do the uprate, we needed
22 to understand the condition of feedwater heaters shell
23 site from erosion, corrosion or floats or other
24 corrosion concerns. We wound up having to put
25 significant amounts of plate in those heaters, around

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1 those heaters, to provide additional wall thickness
2 which, on the other hand, gave us some real insights
3 into a different way to approach the aging of
4 feedwater heaters.

5 Where before we might have been inclined
6 to buy a whole new heater on the older plants where
7 the layout really makes that a very difficult job such
8 as we had experienced at Peach Bottom, coincidentally,
9 we found that being able to replace large sections of
10 the shell or reinforce large sections of the shell and
11 nozzle area with saddles turned out to be a pretty
12 effective way to do that. We did that on the three
13 subsequent units.

14 DR. FORD: Can I ask a question? In your
15 LRA you mentioned that you had integrated a problem
16 before it was a serious problem.

17 MR. BOHLKE: Yes, that's right.

18 DR. FORD: Was there use of the check
19 works and analysis for that particular problem?

20 MR. BOHLKE: It was less -- It was check
21 work supported our extrapolations of the wear rates,
22 but the problem was principally discovered through
23 shell thickness measurements using ultrasonic
24 techniques.

25 DR. FORD: But was the amount of erosion

1 predicted?

2 MR. BOHLKE: We had a predictor that there
3 was going to be erosion there. We hadn't measured it
4 finitely to determine extent. So we would reinforce
5 enough, because we didn't want to go back into it
6 twice.

7 The other thing that is worthy of mention
8 is the steam dryer perforated plates. Now in the
9 cycles at Quad Cities, which ended in about 2000, we
10 had experienced high moisture carryover at the end of
11 the cycle.

12 What we found from our research was that
13 it was due to clustering of high power rods, and the
14 steam production from those rods and their location
15 could overwhelm a dryer bank and, once that bank was
16 saturated, basically just blowing wet steam through
17 that.

18 So GE devised an approach wherein we put
19 a perforated plate under the bottom of the dryer to
20 redistribute the flow and, as a result of that, saw
21 extreme reductions -- significant reductions, like
22 almost a decade worth of reduction, in the moisture
23 content of the steam which, of course, makes the plant
24 run a little bit better.

25 So those were two interesting things.

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1 There were, of course, the other things that you would
2 expect as you read through the list. I'm sure they
3 are not particularly --

4 DR. FORD: But we haven't been updated
5 very recently at all on the steam dryer cracking
6 problems, which I think you will be talking about
7 later on. Is that right? But was that particular
8 modification, putting in the perforated plates, any
9 input to the reason why you got fatigue in those
10 components?

11 MR. BOHLKE: No. All it did was
12 redistribute the steam entering the bottom of the
13 dryer.

14 DR. FORD: Okay. That redesign didn't
15 affect stiffness or anything like that?

16 MR. BOHLKE: It barely touched the
17 differential pressure going into the dryer. We don't
18 think it was much of a contributor at all.

19 DR. WALLIS: Now is this just a special
20 design for you folks or is it a generic thing for GE
21 dryers? Do they do this to all their plants?

22 MR. BOHLKE: I can't comment on that. I
23 just don't know the answer to that. Perhaps when they
24 come in again to talk to you about steam dryers, they
25 will be able to answer that. They may have. I simply

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1 don't know factually if that's true.

2 Slide 11, the following slide --

3 CHAIRMAN LEITCH: Could you go back to
4 that previous one just a second? The condensate
5 demineralizers -- are they now the same at both
6 plants? They both have prefilters and in-line
7 mineralized?

8 MR. BOHLKE: No, because they started out
9 with different filtration. We've got Powdex system at
10 Quad, and we have a deep bed at Dresden. So that the
11 answer at Dresden was to put in a prefilter
12 principally for iron. The answer at Quad was to add
13 another Powdex vessel, so that instead of six we had
14 seven or whatever the numbers were, just because of
15 the difference in fundamental water treatment.

16 CHAIRMAN LEITCH: And everything beyond
17 the demineralizers is without copper now?

18 MR. BOHLKE: Yes.

19 CHAIRMAN LEITCH: There is no copper
20 beyond the demineralizer?

21 MR. BOHLKE: The tubes aren't and the
22 heaters with the condenser. They are stainless in the
23 condenser, and I believe they are stainless in the
24 heaters. So there's not a lot of copper floating
25 around.

1 CHAIRMAN LEITCH: Thanks.

2 MR. BOHLKE: Slide 11 will talk about the
3 Dresden experience following the uprate. As I said
4 earlier, we received the license for extended power
5 operation in the fall of 2001, just after Dresden
6 completed its refueling outage. So we increased its
7 power on the fly, and you see there the capacity
8 factor that we have achieved on that unit since its
9 uprate.

10 I note the bottom line on this slide.
11 That unit, from the time it started up after its
12 refueling outage, ran 690 days. So at least in the
13 instance of Dresden, there were no real challenges
14 that we couldn't manage with respect to Dresden
15 extended power uprate operation. However, we did have
16 an EHC pressure switch buzz its way to death on the
17 startup due to high frequency vibration, and we made
18 the support system for that switch and then
19 subsequently the remaining switches that looked like
20 that much more robust to take that out of play.

21 Over in the turbine building on the
22 suction relief valves on the reactor feed pumps, we
23 have had welds fail due to vibration, and again that
24 is what we would characterize as a more or less
25 expected result of uprate when you are putting the

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1 unit into a different performance mode. We predicted
2 and we expected that we would have some failures.
3 This pretty well fell into that category.

4 The feedwater sample probe failure was
5 somewhat different in that we had had a previous
6 sample failure well before EPU. EPU, however, failed
7 the replacement probe, and it went into the feedwater
8 sparger, and that was not expected, obviously.

9 DR. WALLIS: This is a probe that sticks
10 into something?

11 MR. BOHLKE: It sticks in the feedwater
12 flow.

13 DR. WALLIS: Is it vibration failure
14 again?

15 MR. BOHLKE: Vibrated itself away, as it
16 had done previously.

17 DR. WALLIS: This is increased feedwater
18 flow rate? Is that what has caused it?

19 MR. BOHLKE: Well, that was a contributor,
20 yes. So that's been redesigned.

21 Then we backfit preemptively the
22 modifications from Quad Cities Unit 2 to both dryers.
23 We upgraded the dryers in Dresden 2 during its normal
24 refueling outage after two years of operation, and we
25 preemptively upgraded the dryers on Unit 3 to

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1 incorporate the full Quad Cities fixes as we knew it
2 at the end of last year. But fundamentally, those
3 units have run consistently and predictably.

4 DR. WALLIS: So these vibrations are due
5 to power uprate and increased flow rate? Is that what
6 they are all due to?

7 MR. BOHLKE: Increased flow is one of the
8 phenomena, particularly on the water side.

9 DR. WALLIS: It appears that they cannot
10 be anticipated or you just expect that there may be
11 some vibrations. You just have to fix them if they
12 occur?

13 MR. BOHLKE: My history in starting up
14 nuclear power plants was there are systems that are
15 vibration sensitive, the condensate and feedwater
16 systems and the main steam systems and some of the
17 crossovers being particularly sensitive.

18 So in the evolution of startup, one of the
19 things that we are constantly doing is walking down
20 the plant and observing where we have vibrations --

21 DR. WALLIS: So your strategy is to offset
22 the power and see what happens, let things buzz, then-
23 -

24 MR. BOHLKE: Well, because you can make
25 some predictions analytically, but they are not very

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1 robust predictions, and they dependent on length and
2 mass and all those good things. So that's why you
3 need the walkdowns.

4 DR. FORD: Dr. Bohlke, at the two Quad
5 Cities plants there was, unfortunately, one after the
6 other, failures of the steam dryers.

7 MR. BOHLKE: We are going to talk about
8 that next.

9 DR. FORD: Okay. I'll put off my
10 question.

11 MR. BOHLKE: Then we will see if I cover
12 it in enough detail, and we will decide, if you don't
13 mind.

14 DR. FORD: No, absolutely.

15 CHAIRMAN LEITCH: Before we leave that
16 previous slide, the high frequency vibration -- was
17 that associated with the mounting of the pressure
18 switch or with a hydraulic vibration? Do we know?
19 How was that corrected?

20 MR. BOHLKE: The mounting of the pressure
21 switch. The EH system by itself is unchanged, no more
22 flow, no more pressure.

23 CHAIRMAN LEITCH: And no hydraulic
24 vibration? It's just the mounting of the pressure
25 switch?

1 MR. BOHLKE: So it was steam flow, more
2 vibration on the mother component, and then a switch
3 attached to it.

4 CHAIRMAN LEITCH: Right. Okay, thanks.

5 MR. BOHLKE: Quad Cities: Quad Cities'
6 implementation on Unit 2 came in the spring of 2002,
7 and you see the capacity factor since then in Quad
8 Cities 1 later that year. Now those are the years in
9 which we had two refueling outages.

10 While the Dresden power increase was 17
11 percent, the Quad Cities power increase was 17.8
12 percent because, strangely enough, Quad Cities was
13 licensed with 14 megawatts thermal less than Dresden,
14 for whatever historical interest that is.

15 Again, we had a startup failure, and this
16 happened to be on a main steam low point drain really
17 early on in the post-EPU operation. Then we went into
18 the summer of 2002 when we experienced our first dryer
19 failure, and that took a three-week or so shutdown to
20 replace that, and then a year later in June, not quite
21 a year later, we experienced another degraded
22 condition there.

23 I believe you know the background
24 associated with those. In both cases, we had plates
25 fail in the dryers, in the dryer structure.

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1 In 2001, fall, we had a similar occurrence
2 at Unit 1. When we shut down for the refueling for
3 Quad 2 in the spring of this year -- Well, excuse me.
4 At the time we went in looking at the dryer during a
5 drywell walkdown, we also discovered damage to
6 electromagnetic relief valves. That was unexpected.

7 We repaired that and went back on line,
8 and then we found additional damage, which could be
9 characterized as small structural defects in the welds
10 on the dryer. We discovered that during the refueling
11 outage.

12 For each of the instances where we shut
13 down the units, twice on Unit 2 and once on Unit 1, it
14 was because of a noticeable, measurable increase in
15 moisture carryover, which became our principal
16 indicator of an issue. That contrasted the damage we
17 found in March 2004 during the outage where there was
18 no indication that there was any malperformance by the
19 dryer in that regard.

20 DR. ROSEN: How do you detect the moisture
21 carryover?

22 MR. BOHLKE: We do moisture carryover
23 measures on a daily basis.

24 DR. ROSEN: Use radioactive tracer?

25 MR. BOHLKE: No.

1 DR. SIEBER: You can do a calorimetric

2 MR. BOHLKE: Calorimetric. Thank you,
3 Jack.

4 DR. ROSEN: What kind of damage did you
5 find on the electromatic relief valves? Was it enough
6 to make the valve nonfunctional?

7 MR. BOHLKE: Let me ask Bill Porter from
8 Quad Cities, who is the design engineering manager to
9 specifically answer that, so I don't get caught up in
10 what I don't know here. Go ahead, Bill.

11 MR. PORTER: Yes. I am Bill Porter. What
12 we found was we had one relief that had had another
13 problem or we had some cold spring in a leakoff pipe,
14 and that pipe had broken. That particular relief
15 valve, when the pipe was disconnected, it exacerbated
16 the vibrations, and that one was inop.

17 The other relief valves, we noted some
18 differences in the solenoid arrangements where we saw
19 wear on bushings and some other wear, and we tested
20 all those and all those were still operable. We
21 subsequently modified the solenoids on these valves to
22 make them -- on Unit 2 to make them more robust, and
23 replaced all the ones on Unit 1, and we will be
24 upgrading them on the next outage. But the one that
25 had gone inoperable was due to other problems with the

1 valve.

2 CHAIRMAN LEITCH: Now these valves -- The
3 terminology is confusing me just a little bit. Are
4 these ADS valves?

5 MR. PORTER: They are used for ADS, but in
6 this case on Dresden and Quad these are solenoid
7 operated valves, electromatic relief valves. They
8 don't have the air actuators like some of the other
9 plants, like Hatch and so forth.

10 CHAIRMAN LEITCH: Okay, thanks.

11 DR. BONACA: I have a question. You know,
12 I am looking at the consequences of the upgrades and
13 uprates. When I look at license renewal, most of the
14 aging management problems that are presented are
15 existing problems, minor changes or variations, and
16 they really, most of them, are based on past
17 experience.

18 If you look at -- You go program by
19 program, you reference operating experience. The
20 question I am having is, you know, in this case you
21 have practically a new plant. How are you planning to
22 reflect operating experience from an uprated plant --
23 some systems are going to be more challenged than
24 before -- into the license renewal application?

25 I really didn't see any mention anywhere

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1 in the programs that there was some consideration of
2 that.

3 MR. BOHLKE: I think the answer goes like
4 this. We have some near term issues that we need to
5 work ourselves through that may reflect or may require
6 some additional inspections during refueling outages
7 of equipping, which we may normally maintain but
8 perhaps we don't maintain every cycle.

9 So there may be some things like that
10 which come out. But fundamentally, where we are here
11 is attempting to gain a very thorough understanding of
12 the phenomena which are causing this, and this is the
13 major focus of what we are trying to do.

14 We are not running the units at Quad
15 Cities at their licensed power level. We are running
16 them at the pre-EPU power level except for Quad Cities
17 when we increase the power level specifically for the
18 purpose of collecting data, principally on vibration.

19 We hope that we are able to gain enough
20 data to develop the insights that will let us bring
21 the question of loading of the steam dryer to a final
22 resolution, so we can say with great certainty and
23 with appropriate conservatism that we understand the
24 loads and we have bounded them for purposes of either
25 upgrading the dryer or replacing the dryer.

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1 Similarly, we are attempting to understand
2 the drivers for the vibrations, principally at Quad
3 Cities. We don't see the level -- the baseline levels
4 of vibration at Dresden that we do at Quad Cities,
5 even though the units are reasonably similar, because
6 we think there are some specific configurational
7 differences which are driving it.

8 Again, we are trying to understand what
9 those levels are and have a good model to predict what
10 they are for purposes of developing a conservative
11 bounding approach to those drivers. Out of that, I
12 expect, will come criteria that we will need to adhere
13 to for normal operations and maintenance.

14 What we are dealing with at Quad Cities
15 principally is not so much a license renewal issue as
16 an issue of how do we put the plants in a
17 configuration where we are confident that they will
18 run both safely and reliably at 912 megawatts
19 electric, which is our desired power level. That's
20 the focus.

21 Along the way, it is making sure that we
22 can guaranty to our management, guaranty to the staff,
23 that we've got this thing well understood and bounded,
24 and whatever modifications we need to come out with
25 have been applied to the plant. That's where we are

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1 going with this.

2 DR. BONACA: No, I understand. I just --
3 You know, reflecting on the problems I went through,
4 they are not detailed enough to understand it, but
5 there is no reference to a power uprate anywhere.
6 Most of them state that this program is an established
7 program, there is good operating experience, they have
8 been successful, they are going to maintain it. But
9 in many cases, you've taken exception of GALL on
10 frequency of inspections by saying, well, my
11 inspection is less frequent than GALL, but I have good
12 reasons that say that it is adequate.

13 I have not made a judgment on which
14 program might be affected by the power uprate, but in
15 some cases it may have some impact. You know, I was
16 surprised to see no discussion of that. I was also
17 planning to ask the staff if in the review they
18 considered that point.

19 MR. KIM: The answer is yes, we have
20 considered power uprate in our review of license
21 renewal application. We will talk about that.

22 DR. BONACA: Because subcomponents doesn't
23 make any difference, of course. Some other component
24 does, simply because process parameters are changed.
25 So it's just I was looking for it when I was reviewing

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1 the application, and I didn't see it anywhere.

2 MR. BOHLKE: Rob, did you want to make a
3 point?

4 MR. STACHNIAK: Yes. This is Rob
5 Stachniak. When we looked at all of the various
6 systems for aging management, we looked at all of them
7 with regard to post-EPU conditions, and there were
8 changes in terms of operating parameters, such as
9 velocities and temperatures and so forth. But in each
10 case, we looked at them one by one, and saw the same
11 aging mechanisms that we would expect.

12 The only change that I could tell you that
13 we recognize would be the acceleration of the aging
14 effects. But the programs in every case are set up so
15 that, when you detect a problem, you are going to
16 either, or both, expand the population as well as the
17 frequency.

18 So the programs, if you will, change to
19 accommodate those effects, but parameters such as
20 increased power and the effects of neutron
21 embrittlement, increased flows, in fact, increased
22 temperatures and the effects on equipment -- those
23 were all taken into effect in the review.

24 We didn't distinguish, however, the fact
25 that we had a power uprate. We just treated the

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1 plant.

2 DR. BONACA: No, no, no. I believe that
3 you did that, of course. I mean, this is a different
4 plant. It's uprated. I just was wondering -- You
5 know, you don't have 20 years of experience at those
6 conditions to rely on for comfort. So I just cannot
7 go in great detail, but in some cases I wasn't so
8 convinced that, for example, defending a certain
9 inspection interval that you have defended was
10 appropriate. Maybe you have to do a more frequent
11 inspection.

12 In some cases, GALL, in fact, recommended
13 more frequent inspection. You took some exception.
14 The staff accepted it, and I was wondering, you know,
15 would it be more prudent, given that you have a new
16 plant, that you would go to more frequent inspections.
17 Anyway, I am not being specific here about some
18 problem. We can go to some examples later on.

19 DR. SIEBER: On additional question. In
20 any of these four units, did the vibration induce the
21 failures, generate loose parts that you didn't
22 recover?

23 MR. BOHLKE: When the feedwater sparger
24 went at Dresden, it impaled itself on the tee inside
25 the vessel, and we actually had to -- We actually

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1 recovered it, but it took us a bit. Actually, we
2 found it first, and figuring out where it came from
3 was an issue.

4 At Dresden Unit -- Bill, at Dresden Unit
5 1, I don't recall. Did we finally find -- I'm sorry,
6 Quad Cities Unit 1. Did we finally find that last
7 part?

8 CHAIRMAN LEITCH: Would you move to the
9 microphone and identify yourself, please.

10 MR. PORTER: It really wasn't -- This is
11 Bill Porter. It really wasn't EPU per se, but the
12 dryer two times has ejected parts. The first time we
13 recovered them all. This last time we believe the
14 part is in the lower reactor head, and we have plans
15 going forward to evaluate that or retrieve it,
16 depending on the situation that we come up with.

17 DR. SIEBER: Are you going to attempt to
18 recover that part somehow?

19 MR. PORTER: That is our current plans in
20 the next refueling outage for that unit. That is Unit
21 1, by the way.

22 DR. ROSEN: How have you assured yourself
23 that that lower part won't block flow and damage fuel?

24 MR. PORTER: We did an analysis of where
25 the part could be. We did extensive looking for this.

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1 We also found indication on the recirc pump impeller,
2 some minor marks on it, that showed that we had
3 transitted that. That is basically by process of
4 elimination and looking at every other place that the
5 part could conceivably be other than the lower reactor
6 head, determined where we believe the part is.

7 We looked at the components in the lower
8 reactor head. They are robust components compared to
9 the mass of this particular piece that's in there.
10 Most likely it is at least two pieces now, based on
11 the marks that we saw, and we plan on attempting to
12 find that during Q1R-18 which will be coming up next
13 March.

14 DR. ROSEN: How big a piece are we talking
15 about, assuming it is in two pieces?

16 MR. PORTER: Well, the whole piece,
17 quoting from memory, is about 6 1/2 by 9 inches, as I
18 recall.

19 DR. ROSEN; It's plate?

20 MR. PORTER: Yes, it's plate material,
21 half-inch plate.

22 DR. ROSEN; So the broken half -- it would
23 be half those dimensions. Of course, we have no
24 assurance that is true.

25 MR. PORTER: Right. That's correct. It's

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1 a triangular piece.

2 DR. ROSEN: Do you have any loose parts
3 monitoring equipment?

4 MR. PORTER: No, sir. This vintage didn't
5 have the loose parts monitors. What we saw was
6 basically the marks on the impeller.

7 MR. BOHLKE: Once it's down in the bottom
8 head, down in the penetrations in the nozzles in the
9 bottom head, which is a very low flow area, we
10 wouldn't even expect it to move.

11 CHAIRMAN LEITCH: Has there been any
12 restriction of your ability to take suction to the
13 reactor water?

14 MR. PORTER: One thing that we have seen
15 since then is we have had an issue with the
16 thermocouple on our lower head drain. It is possible
17 that there may be some blockage there. This is the
18 one of the things that we are considering and going to
19 look at.

20 I will say, though, that there have been
21 parts found in that area before that have not affected
22 operation or affected those temperatures. So it could
23 or it couldn't be this part, depending on what we find
24 when we go look for it.

25 CHAIRMAN LEITCH: We have picked some

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1 parts up in other reactors from that lower head. It's
2 quite an amazing thing, how they go down there. I
3 mean, it's got to be, what, 90 feet under the surface
4 of the water, and they pluck those things out of
5 there.

6 DR. SIEBER: Well, they swim. You end up
7 with two problems. One is a potential flow blockage.
8 The other one is fretting due to vibration and
9 movement. You typically do a calculation to make a
10 determination that it is safe to operate with the part
11 where you think it is and in the shape you think it is
12 in. On the other hand, the longer you leave it there,
13 if there is vibration and movement, it will fret away
14 against whatever it is laying against, which
15 eventually, given enough time, will cause a leak.

16 So I would presume that you are really
17 looking for the part and not relying on the
18 calculation that says it is okay to run.

19 MR. BOHLKE: Yes. We have to, as you
20 know, do some significant disassembly to fly a robot
21 down in there.

22 DR. SIEBER: That's right, or a camera.

23 MR. BOHLKE: Which is how we are going to
24 do it. We will fly one in there. We've done that
25 before for other units for inspection purposes.

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1 DR. ROSEN: But, Bill, your sense of it,
2 I think, from your earlier comment is that it is
3 probably laying on the bottom of the vessel, because
4 the flow is low enough that it's not flying and
5 impacting the bottom of it?

6 DR. SIEBER: Well, the interesting thing
7 is that, in order to get to the bottom, it has to go
8 through -- down through a lot of upflow, and so it
9 could be someplace else, too.

10 MR. BOHLKE: We haven't seen any
11 indication that it would be anywhere else, such as
12 lodged against the bottom guide. We don't have any
13 indication of that. So we will do that -- our search
14 for it very methodically next spring, and see what we
15 find.

16 CHAIRMAN LEITCH: And just one more thing
17 on this issue, Bill, and I know that is perhaps a
18 little off the topic of license renewal, but I am just
19 curious. On Quad Cities you are not up to what is now
20 100 percent? That is, you are not up to the EPU
21 rating?

22 MR. BOHLKE: No, we are 2511 megawatts
23 thermal.

24 CHAIRMAN LEITCH: Which is the original
25 100?

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1 MR. BOHLKE: Which is down in the 780
2 megawatt range, if I recall.

3 CHAIRMAN LEITCH: And your plans to come
4 up are based on what? What needs to happen for you to
5 get on up?

6 MR. BOHLKE: Was it last week or the week
7 before? Last week we came up to do some data
8 gathering. We staged our way up to 912 megawatts,
9 which is our electrical limit, not our thermal limit.
10 But the units, as you may recall from the previous EPU
11 review, are limited by the generators, not by the
12 thermal power of the core that we are licensed to.

13 So the only time we come anywhere near the
14 2957 is during the hottest month of the summer.
15 Typically, in the winter months, for example, we are
16 well down below that.

17 So what we did last week was work our way
18 back up to our electrical limit, taking measurements
19 at preselected locations so we could begin doing our
20 calculations and comparisons, and we came back down
21 again.

22 CHAIRMAN LEITCH: Then it depends on some
23 of this analysis work that is ongoing when you come on
24 up to the full power rating, although you may not be
25 able to get to the licensed limit, but the electrical

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1 limit anyway.

2 MR. BOHLKE: Right. That concludes my
3 portion of the presentation.

4 DR. WALLIS: How do you find out these
5 parts of dryers? Certainly, there may be a change in
6 carryover, but maybe not. A piece can bend or come
7 loose, and it doesn't necessarily change the
8 effectiveness of the drying. So it rattles around for
9 a year until somebody happens to notice it during
10 refueling or something?

11 MR. BOHLKE: No. Let me just spend a
12 minute and tell you how these things played out, and
13 then what we went to do.

14 We had the first one in the -- The first
15 indications were in June 2002, and it manifested
16 itself through two things, increase in moisture
17 carryover and a difference in the indicated reactor
18 vessel water level.

19 DR. ROSEN: Indicated reactor?

20 MR. BOHLKE: Reactor vessel water level.
21 You all need to have a special session just focused on
22 dryer, and I believe staff is starting down that path,
23 because I'm not prepared to do it in enormous detail.
24 Jim Meister and Bill Porter have even more
25 information, but we don't have a lot of slides

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1 prepared, and it needs to be a very logical
2 presentation so that the facts unfold. But short
3 version.

4 We saw the increased moisture carryover
5 difference, slight difference in the reactor vessel
6 level between one side of the vessel and another, and
7 we knew something was going on. Eventually, we shut
8 down at an appropriate point to go in it.

9 Now when we took the lid off and looked at
10 it, there was a hole in the dryer. You could see it.
11 We said, well, the hole is about the right size. In
12 fact, the hole is the right size for the moisture
13 carryover we saw.

14 A year later, a little bit less than a
15 year later in June, we saw increased moisture
16 carryover, and we shut it down, and we saw a hole
17 about the size we expected to see.

18 That fall we got to see Dresden 2 in its
19 refueling. This was in the fall of 2003, and Dresden
20 2 had a crack-like defect where we expected, but it
21 wasn't throughwall. There was no moisture carryover,
22 but you could see where at some point in time perhaps,
23 it would get bigger.

24 So it turned out that moisture carryover
25 is a very, very good predictor that you had a

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1 separation between a weld and a plate or in the plate
2 base material. So that is why we do the daily
3 moisture carryover measurements.

4 We think we find it very soon after it
5 happened, and we think it gives us a pretty good
6 indication of how big the hole is, if you will, if
7 there is a hole there. So that's how it has played
8 out for us.

9 DR. SIEBER: Well, the only reason why I
10 bring up the unrecovered loose parts is, to me, that
11 is a new and different aging mechanism, and I think
12 the staff ought to monitor what goes on at that plant
13 to see that they resolve where the part is, whether it
14 is recovered or not, or if it is safe to leave it
15 where it's at.

16 MR. BOHLKE: I can't predict the future,
17 and I can't predict the regulatory path, but I
18 certainly agree that it is likely that there will be
19 some attributes that we previously didn't think were
20 necessary that will be employed to provide appropriate
21 assurances that everything is okay.

22 We were a little bit surprised that a
23 loose part would disappear on it like that one, but we
24 thought we would capture it.

25 DR. SIEBER: Well, it actually happens.

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1 This is not a rare, unique event. A lot of plants
2 have loose parts, and a lot of them are just
3 positioned. It's just that, to me, there is a
4 potential for a different kind of aging mechanism.

5 MR. BOHLKE: Oh, I agree with you about
6 plants and loose parts, but it was a surprise to us
7 that a part from a dryer could go undetected.

8 DR. SIEBER: Well, it surprises me that it
9 can go backwards against the flow and end up in the
10 bottom of the vessel. I would expect it would go out.

11 MR. BOHLKE: Well, the jet pumps are going
12 to sweep it down.

13 DR. SIEBER: Yes, it's possible.

14 MR. BOHLKE: And you know, there's a lot
15 of stuff in there to hit and slow it down and move it
16 into areas. I mean, there's an awful lot we don't
17 understand about what is going on, I guess, is the
18 best point.

19 DR. SIEBER: Yes. It will hunt for a way
20 to get out of the rapids. There is no doubt about
21 that.

22 MR. KIM: Excuse me. Just to clarify on
23 the loose parts issue, isn't it true that there are
24 some pieces, broken pieces, that ended up down the
25 main steam line?

1 MR. BOHLKE: From the very first Quad
2 Cities event, and we opened up the vessel in July
3 2002, we found the missing plate in one of the main
4 steam lines lodged in the Venturi.

5 MR. KIM: Right.

6 CHAIRMAN LEITCH: That relates to my
7 question. A lot of this is not really license
8 renewal, but this one issue, I think, is. We have
9 said that the steam dryer is not in the scope of
10 license renewal, because it is not safety related.
11 Yet in almost the next sentence of the discussion, it
12 talks about these parts as migrating down the main
13 steam lines and being caught on the turbine stop valve
14 screens, which says to me they have been through the
15 MSIVs.

16 How do we know they couldn't get lodged in
17 the MSIVs and prevent the proper operation of the
18 MSIVs? What is the rationale? I guess the staff
19 accepted the position that the dryers are not in
20 scope, and I am just wondering what the rationale is
21 for that position. If you want to, we can defer that
22 issue until staff's presentation.

23 MR. KIM: Yes, sir.

24 MR. KUO: When T.J. makes his
25 presentation, he is going to discuss some of it, and

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1 then if you still have questions, we have the staff
2 expert here to answer your questions.

3 CHAIRMAN LEITCH: Okay, good. Thanks,
4 Bill. I think you told us you were done about 10
5 minutes ago, right?

6 DR. SIEBER: You were trying to be done.

7 CHAIRMAN LEITCH: Well, we appreciate the
8 additional information. Thank you.

9 MR. BOHLKE: You are quite welcome.

10 MR. POLASKI: So we are on Slide 13, and
11 this is Fred Polaski.

12 We were asked to provide some information
13 on major equipment replacements that have occurred at
14 both Dresden and Quad Cities. Those are already
15 discussed. Those are related to EPU.

16 This slide shows other major replacements
17 that have occurred over the history of both plants.
18 Reactor water cleanup piping at both sites, both
19 plants, has been replaced with piping that has been
20 resistant to intergranular stress corrosion cracking
21 to eliminate that problem. At Quad Cities --

22 CHAIRMAN LEITCH: Fred, at that time did
23 you change the location of the reactor water cleanup
24 pumps in the system from cold to hot, because I
25 noticed that the aging mechanism is all -- is the same

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1 for all units, and I was wondering if the position of
2 the pump was the same in all conditions? I mean not
3 the physical position. I mean schematically in the
4 system.

5 MR. POLASKI: I can't answer that. Rob,
6 can you address that?

7 MR. STACHNIAK: The reactor water cleanup
8 systems at Dresden and Quad Cities are of a different
9 configuration, but when the piping was replaced, the
10 pumps remained in the same locations. At Dresden
11 there is a low pressure pump at the inlet side with
12 recirculation pumps near the back end, pushing the
13 water back. There's actually two pumps in the reactor
14 water cleanup.

15 In Quad Cities, which is considered a
16 higher pressure system -- Bill, can you help me. I
17 don't know if you are familiar with the system
18 operation, where the location of the pumps are.

19 CHAIRMAN LEITCH: There's some places you
20 are using hot pumps and some places cold.

21 MR. PORTER: We've got the cold pumps, but
22 I believe that was done before we changed out the
23 material. I think that was already an earlier
24 modification.

25 CHAIRMAN LEITCH: So the aging management

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1 program is appropriate for the cold pumps?

2 MR. PORTER: That's correct. I mean, cold
3 is a relative term.

4 CHAIRMAN LEITCH: I understand that.

5 MR. POLASKI: the next is at Quad Cities
6 some of the RHR service water piping has been
7 replaced. It was discovered early in operations in
8 the mid-1970s that, due to an installation error,
9 leaks were developing in the RHR service water piping,
10 and it was repaired and then later about half of that
11 piping was totally replaced with new piping to
12 eliminate the problem.

13 DR. FORD: What was the mechanism of the
14 leaking?

15 MR. POLASKI: The problem was, as I
16 understand it, during initial installation when the
17 pipe was being put in place, there were stanchions
18 underneath the pipe to hold it in place while the
19 welds were being made. This was underground buried
20 pipe. Then when the trenches were backfilled, the
21 stanchions were not removed.

22 So they wore holes through the pipe from
23 the outside. So those areas where that had occurred,
24 the entire pipe run was replaced with new piping in a
25 different configuration.

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1 DR. SIEBER: Piping like that usually has
2 a fair amount of mic attack going on in it.

3 MR. POLASKI: This, as I understand, was
4 just due to having left these construction stanchions
5 in place, and it wore through from the outside. It
6 was a mic issue.

7 DR. WALLIS: Did you see any mic issues at
8 all in the pipe?

9 MR. POLASKI: I can't answer.

10 MR. BOHLKE: Mic has been a low level
11 issue, not a high level issue, at Quad Cities since
12 I've been there. Bill, do you have any other insights
13 on mic, the extent of mic?

14 MR. PORTER: Bill Porter. No, if you look
15 at the dates on here, this is in the mid-seventies.
16 So the mic situation really had not had time to show
17 up yet. Currently, we are still seeing some minor
18 problems that we are looking at as part of our
19 programs, and fixing them as we see them.

20 DR. SIEBER: These systems ordinarily have
21 fairly low flow through them.

22 MR. BOHLKE: RHR service water we use for
23 our shutdown.

24 DR. SIEBER: Right, but not during
25 operation. So 90 percent of the time or 95 percent of

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1 the time, flows are low. So the chemistry is hard to
2 deal with.

3 MR. POLASKI: I guess the other thing on
4 mic -- and I'm not sure of the exact details -- is I
5 know the experience at some plants have a major issue
6 with mic, just because of the water chemistry, and
7 other plants it exists but it's never been an issue.
8 So it varies greatly from plant to plant.

9 The next major change on Dresden Unit 3,
10 and only Dresden Unit 3, we replaced the recirc piping
11 again with piping that is not -- or resistant to
12 IGSCC.

13 On the other three units, Dresden 2 and
14 both Quad Cities units, piping has not been replaced.
15 However, we have implemented stress improvement on the
16 welds to eliminate or reduce the possibility of IGSCC
17 cracking of those welds.

18 Main power transformer --

19 CHAIRMAN LEITCH: That is mechanical --
20 They are 304 stainless in those other three units, and
21 you did the mechanical --

22 MR. POLASKI: Well, they have done both
23 mechanical and induction heat stress improvement, as
24 appropriate. So they have done both of those, and we
25 are doing all the inspections required by 8801 and ISI

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1 program. So far, that appears to have been a
2 successful mitigation to the problems.

3 I guess also in that area -- and I'll jump
4 to the last item on the list there -- we have
5 installed and operate routinely hydrogen water
6 chemistry at both plants. We have used zinc injection
7 and noble metals injection to try to mitigate IGSCC,
8 and that's been successful.

9 DR. FORD: Could I just follow up on that?
10 On the staff's SER, they quote, "The applicant stated
11 that inspection frequencies are only reduced in Unit
12 2" -- That's Quad Cities Unit 2 -- "where improved
13 water chemistry has been demonstrated to be
14 effective."

15 I assume that's hydrogen water chemistry.
16 The implication here is that there were some systems
17 where there was not improvement. Am I just reading
18 something there?

19 MR. POLASKI: What that says is that we
20 have not taken credit, because we haven't taken credit
21 as allowed by VIP for reducing the inspection
22 frequency because of water chemistry. So we still
23 inspect as if we were not using hydrogen water
24 chemistry

25 DR. FORD: Oh, okay.

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1 MR. POLASKI: So even though we are doing
2 the things to reduce the probability and the
3 possibility of IGS, still inspecting as if those were
4 not being implemented. So we are inspecting more
5 frequently than we need to.

6 DR. FORD; Okay, but where there are
7 defects -- Are there any defects at all in these
8 systems?

9 MR. BOHLKE: You mean cracks left?

10 DR. FORD: Cracks.

11 MR. BOHLKE: Well, we have done several
12 weld overlays in the period of time from 1998 to 2004
13 either as a result of what we have found and repaired
14 during that outage or a preemptive weld overlay based
15 on trends that we have seen. But we are still at the
16 point where we are managing that issue, and we are
17 comfortable with the weld overlay as an appropriate
18 technique, as opposed to a wholesale --

19 DR. FORD: Okay, but you are relying on
20 stress improvement rather than the hydrogen water
21 chemistry or noble chem?

22 MR. STACHNIAK: Well, we have done stress
23 improvements, and we operate hydrogen water chemistry,
24 and we do noble metals.

25 MR. BOHLKE: We've got all of those

1 things, but as our inspection programs become more
2 refined, our ability to detect becomes more
3 quantifiable, particularly with digital readouts from
4 ultrasonic, we are able to more accurately identify,
5 quantify, evaluate.

6 So that puts us in a program, but it's on
7 a onesy-twosy basis as opposed to any wholesale
8 repairs going back in. We think that is quite
9 manageable.

10 DR. FORD: The reason I am asking the
11 question is that noble chem is being fairly widely
12 applied now, but we don't have an awful lot, given the
13 time period, of inspections. Now I thought I read
14 into here there was some situations where they were
15 seeing crack propagation, and the answer to that is
16 no.

17 MR. BOHLKE: That is correct.

18 DR. FORD: Could you go back and just talk
19 to us about core shroud repairs? You jumped over it.

20 MR. POLASKI: Well, I was going to go back
21 to it. Let me just get the other ones.

22 Main power transformer have been replaced
23 at three of the units. The fourth one will be
24 replaced in spring of 2005. So we will have replaced
25 all of the main power transformers.

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1 DR, SIEBER: But that is not the problem
2 that is limiting your capacity, is it?

3 MR. POLASKI: Our capacity is limited by
4 generator.

5 MR. BOHLKE: Lifetime of the transformer.
6 It's the transformer.

7 DR. SIEBER: But that is not the limiting
8 for the plant op. That's generator.

9 MR. POLASKI: Generators is the limiter.
10 Dresden Unit 1 fire main piping was
11 replaced because of problems passing its required flow
12 testing, and the Dresden Unit 1 fire main, because of
13 the design with the two plants, and Rob will go into
14 some more details as part of the overall fire
15 protection system at Dresden. So that was replaced
16 because of not being able to pass its flow testing.

17 On core shroud, we have IGSCC cracking in
18 all four core shrouds, and we have installed the
19 hardware that clamps the shroud in place to compensate
20 for the cracks.

21 DR. FORD: That is going to be a permanent
22 repair?

23 MR. POLASKI: Yes. Don't know any other
24 plants right -- We have no plans right now to replace
25 the shroud. That isn't being considered. So it's

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1 permanent, and those hardwares are inspected routinely
2 as part of vessel internal inspections.

3 CHAIRMAN LEITCH: As I recall, there is a
4 TLAA associated with that hardware.

5 MR. BOHLKE: So it may be that to achieve
6 a full sixty years we may have to go in and replace
7 that hardware, but again, based on our inspections and
8 our calculations of life, we would prefer to do it
9 preemptively as opposed to reactively. That's
10 basically how we are trying to manage vessel
11 internals.

12 DR. FORD: And you won't be making a case
13 that noble chem is protecting or stopping the cracks,
14 regardless of the clamping?

15 MR. BOHLKE: Well, in the shroud itself,
16 if you are not relying on the shroud weld for holding
17 the top and the bottom of the shroud together, you are
18 relying on the hardware. Your concern is that the
19 hardware is capable of performing its function.

20 If it is holding the shroud in place in
21 the proper compression, I don't know that you would
22 see the crack propagation, because you shouldn't have
23 the stress.

24 MR. STACHNIAK: This is Rob Stachniak. As
25 I understand, the hardware repairs replace the

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1 horizontal welds, if you will, in terms of the
2 structural integrity. The inspections of the vertical
3 welds, to my knowledge and memory from all the review
4 at this time, have no indications on the shroud welds.
5 Mike, can you remember from your review also if that
6 is correct?

7 MR. HAYES: yes, you're correct, Rob.
8 This is Mike Hayes. You are right. The clamps did
9 replace the horizontal welds structurally.

10 MR. STACHNIAK: Thank you.

11 DR. FORD: The reason why I am pushing on
12 this one, it was always my understanding that clamping
13 method for repairing or mitigating a core shroud
14 repair was never meant to be a long term mitigation
15 action. Now that was my understanding, and maybe I am
16 incorrect on that. Maybe we can ask the staff. Was
17 I correct that the clamping option was never meant to
18 be a long term mitigation action?

19 MR. ELLIOT: This is Barry Elliot. We
20 have reviewed their BWR VIP program for the clamps,
21 and we approved it. So it's a long term program.

22 MR. FORD: I'm mistaken.

23 MR. ELLIOT: Subject to inspection. There
24 is an inspection program built into the BWR VIP
25 program for the shroud.

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1 MR. KIM: And as it was mentioned earlier,
2 for license renewal there is a specific TLAA that
3 addresses.

4 DR. FORD: Okay.

5 MR. POLASKI: Shall we go on to Slide 14.
6 In addition to talking about replacements that have
7 occurred, we'll talk a little bit about --

8 CHAIRMAN LEITCH: Just before you get too
9 far into this, could you tell us about your ECCS pump
10 screen modifications at Dresden and Quad Cities? I
11 guess, ten years ago or so, most BWRs modified their
12 screens. Was that done at Dresden and Quad Cities?

13 MR. STACHNIAK: Again, this is Rob
14 Stachniak. Yes, the suction strainers in the
15 suppression pool at all four units were modified and
16 enlarged, and they are currently in place. Yes.

17 CHAIRMAN LEITCH: Okay, thank you.

18 MR. POLASKI: All right. So now we are on
19 slide 14, taking a look into the future for equipment
20 replacements. Exelon has developed what we call a
21 long term asset management program that addresses long
22 term issues with major plant equipment.

23 This includes both safety related and non-
24 safety related equipment. Just some examples:
25 Reactor and internals; reactor vessel heads, most

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1 specific emphasis on the PWR heads; main turbine; main
2 generator; a lot of other equipment. Those are just
3 some examples.

4 This long term asset management program
5 addresses various types of long term issues, including
6 material degradation, obsolescence and also looking at
7 plant improvements.

8 We set this program up to complement other
9 programs that address equipment issues, things like
10 our preventive maintenance program, performance
11 centered maintenance, and our system health reports.
12 The combination of all these programs provides us with
13 a full coverage of both long term and short term aging
14 issues.

15 I would also like to mention that the long
16 term asset management program is an integrated program
17 for all 10 Exelon nuclear units. So we get some
18 information back and forth between the plants, and we
19 use this as one of our major inputs into the decision
20 making process on long term replacements, and it is
21 part of our long term planning and budgeting process.

22 On slide 15, just to give you some
23 examples of some of the things that were considered in
24 here. This is just a list of some of the more major
25 ones that we've got in the process. I will note, all

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1 of these are preemptive issues, that we look at these
2 preemptively based on data, and it provides us the
3 information that we get into the planning process of
4 when we should make these replacements, whether we
5 should replace or refurbish.

6 So we are looking at things like main
7 generator rewinds, turbine rotor replacements, I&C
8 system upgrades, those kinds of things.

9 DR. SIEBER: What kind of upgrades are you
10 talking about in instrument and control?

11 MR. POLASKI: Instrument control -- and
12 all these are still considerations. WE haven't made
13 decisions on these. It could be digital feedwater
14 control systems, replacing the EHC system with a new,
15 more modern digital EHC system.

16 DR. SIEBER: So you are not talking about
17 a totally digital control room?

18 MR. POLASKI: No.

19 DR. SIEBER: You will do it system by
20 system or loop by loop.

21 MR. BOHLKE: I wouldn't preclude that as
22 a far future. I think we would like to move toward
23 that, but per se, no. It's not the immediate focus.
24 The immediate focus is addressing the becoming
25 obsolescent analog systems with more robust, etcetera.

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1 On the way, we can take advantage of things to try to
2 modernize your control room, and that is being done
3 not just for us, but across the industry.

4 CHAIRMAN LEITCH: Just a curiosity
5 question. Is the main generator rewind -- would that
6 kind of an operation get you up to be able to generate
7 your licensed power limit or would that be a total
8 generator replacement?

9 MR. BOHLKE: It is intended to be a
10 rewind. Now we think we've got enough available
11 density in the state of rotor to be able to use all of
12 the licensed power, but then it becomes a question of
13 the auxiliary's state of water cooling, things like
14 that.

15 So again, it is an economic tradeoff. Is
16 it worth the investment in everything else plus the
17 rewind or should we just stay where we are, do a like
18 for like rewind. We haven't concluded one way or
19 another yet on that.

20 DR. SIEBER: What you are saying is you
21 have enough iron.

22 MR. BOHLKE: Yes, we have enough iron.
23 That's correct.

24 DR. SIEBER: Okay.:

25 CHAIRMAN LEITCH: So this is a list of

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1 things that you are kind of thinking about and
2 analyzing for the whole Exelon system, not
3 specifically --

4 MR. POLASKI: You're right, and this is
5 only a partial list. The overall list probably has 30
6 or 40 different topics on it that we consider on a
7 fleet-wide basis for all of our plans to put together
8 a long range plan.

9 MR. BOHLKE: And the most important part
10 of all of this is that it is programmatic. It is not
11 a hit or miss thing. It is laid out, and we examine
12 it regularly and make decisions, because what we are
13 trying to do -- Let's take one example.

14 If we said we had to do a major condenser
15 tube replacement, that would inherently, we think, be
16 a longer outage than some of the numbers that you have
17 seen up there that I showed earlier. Well, if you
18 knew you had an outage that was, let's say, twice as
19 long as your normal outages, then you would take an
20 opportunity to do some other things.

21 So that takes a lot more long term
22 planning, and that is the kind of thing we are trying
23 to do.

24 DR. SIEBER: But, really, to me, these
25 kinds of lists are part of normal operations that

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1 every plant does, and doesn't have any impact, one way
2 or another, on license renewal.

3 MR. POLASKI: You are right. This is how
4 we run the business, looking proactively into the
5 future, not license renewal.

6 DR. SIEBER: It's the way you keep your
7 asset viable.

8 MR. POLASKI: Yes. Okay, with that I'd
9 like to turn the presentation over to Rob Stachniak
10 who is going to discuss some aspects of the scoping
11 process and also aging management programs and their
12 alignment with GALL.

13 MR. STACHNIAK: This is Rob Stachniak.

14 Exelon was asked to provide information
15 concerning several scoping topics that would be
16 considered unique. The first of these topics deals
17 with Dresden Unit 1.

18 Dresden Unit 1 was shut down in 1978 and
19 is currently in a safe store condition. All of the
20 nuclear fuel has been removed from the reactor vessel
21 and from the Unit 1 spent fuel pool. All of the fuel
22 is now in dry cast storage on site, as Bill showed you
23 earlier.

24 There are a few Unit 1 systems that are
25 maintained operable for support of Unit 1 activities.

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1 However, there is one system in Unit 1 that does
2 provide support to Units 2 and 3, and it was credited
3 in license renewal.

4 That system is the fire protection system
5 for Unit 1, which includes the underground fire
6 protection supply header, the diesel fire pump, the
7 screen wash pumps, and the building that houses this
8 equipment, which we call the Unit 1 Cribhouse.

9 I might also point out that this equipment
10 is included in the Unit 2 and 3 maintenance rule
11 monitoring program.

12 I would now like to move on to Slide 17.
13 The second scoping topic that I would like to talk
14 about deals with the scoping of non-safety related
15 piping. Interim Staff Guidance letter Number 9
16 provides guidance concerning the scoping of non-safety
17 related pipe.

18 The ISG addresses two aspects of non-
19 safety related scoping -- non-safety related system
20 scoping. The first deals with the non-safety related
21 pipe that is attached to safety. Specifically, the
22 ISG recommends that you include all components of the
23 non-safety related pipe up to the first seismic
24 anchor.

25 The design of the non-safety related

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1 piping systems for plants that are of the vintage of
2 Dresden and Quad Cities did not incorporate seismic
3 anchors.

4 Initially, our scoping effort at both
5 sites included pipe and components up to the first
6 support in each orthogonal direction, and that was
7 later expanded to include pipe and components up to
8 the second set of supports in each orthogonal
9 direction.

10 DR. ROSEN: Before you get off that point,
11 Rob, there is an open item -- or there was an open
12 item related to this subject, the equivalent anchor
13 question. Is that going to get talked about some
14 more?

15 MR. STACHNIAK: Our proposed resolution
16 was what we had just said here, moving the support or
17 the boundary of the systems out to the second support
18 in each orthogonal direction. After discussion with
19 the staff, what we came down to was what is an
20 equivalent anchor for the design of Dresden, and
21 moving the boundaries out to two supports in each
22 orthogonal direction ensures that, if the piping
23 between the two sets of supports were to degrade for
24 any reason, you would still maintain structural
25 integrity back in the safety related attached portion.

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1 DR. ROSEN: So the staff is going to close
2 this item?

3 MR. KIM: Yes, sir, we are. Like you
4 said, it is the subject of an open item, and we are
5 going to be talking about that during our
6 presentation.

7 MR. STACHNIAK: The second aspect of ISG
8 Number 9 concerns spatial interaction between non-
9 safety related and safety related components. Our
10 initial scoping effort implemented at both sites
11 excluded non-safety related equipment separated from
12 safety related equipment by more than 20 feet.

13 As a result of the scoping and screening
14 methodology audit and subsequent discussions with NRR,
15 the physical separation criteria was later abandoned.
16 Exelon has evaluated the impact this methodology
17 change had on the initial scoping results.

18 Some additional piping systems were added
19 to the scope of license renewal, and the final impact
20 that this methodology change had will be reported to
21 the staff very shortly.

22 CHAIRMAN LEITCH: Now as I recall, what
23 you did at Peach Bottom basically, was if non-safety
24 related -- If it was non-safety related piping in a
25 building that contained safety related equipment, you

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1 basically called it all in scope.

2 It sounds like initially here you
3 attempted to do something less than that by --
4 depending upon the physical configuration of the
5 equipment. But are you now going to just fall back to
6 your Peach Bottom approach?

7 MR. POLASKI: Graham, let me explain the
8 difference. At both Peach Bottom and at Dresden and
9 Quad Cities, in the reactor buildings and also in the
10 diesel generator buildings, any non-safety related
11 water systems or any fluid systems were brought into
12 scope.

13 CHAIRMAN LEITCH: Right.

14 MR. POLASKI: Peach Bottom had very little
15 safety related equipment in the turbine building, and
16 basically it was fuses that were isolation fuses
17 between safety related and non-safety related. In
18 those, we took the position that, if they got wet,
19 leaked, sprayed on, they fail at the safe condition,
20 which is the fuse opened up.

21 The Dresden and Quad Cities physical
22 design is different in that there are safety related
23 pieces of equipment in the turbine building, like 480
24 volt motor control centers that are safety related and
25 sit in the turbine building in proximity to non-safety

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1 related fluid systems.

2 We took the initial position at Dresden
3 and Quad to look at a distance limit that said, if the
4 non-safety related piping system was 20 feet away from
5 medium energy, that was far enough that, if that pipe
6 leaked and sprayed, we were far enough away that it
7 wouldn't impact the safety related equipment.

8 We have since -- you know, after
9 discussions with the staff, have eliminated that
10 distance criteria, and we are bringing in additional
11 systems or expanding non-safety related systems
12 without any spatial -- without distance limitation.

13 So it comes down to a lot of -- The
14 process was the same. It's just we had a lot of
15 safety related equipment in the turbine building at
16 Dresden and Quad Cities.

17 DR. ROSEN: So I'm sure you can appreciate
18 and are cheering us on, but we are trying to write a
19 letter this week on this, are we not? Oh, no. Okay.
20 We've got time. So these issues really need to get
21 closed out. I'm surprised at the lack of closure at
22 this stage.

23 MR. KUO: Dr. Rosen, during the staff
24 presentation, T.J. will discuss about it. Again, if
25 at that time you have questions, staff will certainly

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1 answer whatever the question you have. But this
2 question had been subject to extensive discussion
3 between the staff and the applicant.

4 DR. ROSEN: But we are actually seeing
5 this in mid-process, I think, is what you are saying.
6 The applicant is going to take certain actions, and
7 staff is going to review them.

8 CHAIRMAN LEITCH: There are five open
9 issues, but at this point there are five open issues
10 in the draft SER.

11 MR. KUO: In the draft SER, right.

12 CHAIRMAN LEITCH: An open issue may mean
13 at this stage -- It could well mean that the issue is
14 essentially resolved, and what is awaited here is
15 formal documentation and closure of the paperwork
16 between now and the time the final SER is issued.

17 MR. KLUGE: Yes, I would say that will be
18 the case for all five open items.

19 CHAIRMAN LEITCH: And we will hear some
20 more from the staff on that. Okay.

21 MR. STACHNIAK: I would now like to move
22 on to Slide Number 18. The next topic we were asked
23 to discuss was exceptions to GALL.

24 The Dresden and Quad Cities license
25 renewal application describes 47 different aging

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1 management programs. Of these, 38 correlate to
2 programs --

3 CHAIRMAN LEITCH: Rob, just before you get
4 into that, I'm sorry to interrupt you. But again, I'm
5 thinking back to Peach Bottom. You did some scope
6 realignment of piping systems, and I guess I am trying
7 to think of perhaps a compressed air system running
8 through containment.

9 MR. STACHNIAK: Yes.

10 CHAIRMAN LEITCH: The compressed air
11 system per se was not in scope, but you took that
12 portion of the piping up to the isolation valve on
13 either side of it and actually scoped that with
14 containment, and included it in scope.

15 MR. STACHNIAK: That's correct.

16 CHAIRMAN LEITCH: Has a similar approach
17 been applied here? Is that what you did here?

18 MR. STACHNIAK: The Dresden and Quad
19 Cities scoping methodology did use that same criteria.
20 We made very clear in the application for the staff on
21 a system by system basis where we did that, so that it
22 was easier for the staff to identify and recognize
23 where we did that. Yes.

24 CHAIRMAN LEITCH: Okay. I had a little
25 trouble finding that, but if that same approach was

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1 used, I understand. That's fine. Yes.

2 MR. STACHNIAK: Of the 38 programs --
3 Thirty-eight correlate to the programs described by
4 the GALL. Of those 38, we determined that 18 are
5 consistent with no exceptions to GALL.

6 The remaining 20 programs are consistent
7 with GALL containing some exceptions. However, in
8 each case the exceptions contain alternative aging
9 activities acceptable to the NRC staff. Let me
10 provide you with three examples to offer some insight
11 on what these exceptions are.

12 The first example relates to the BWR
13 penetration inspection program. This program covers
14 the inspection of standby liquid control and
15 instrument penetrations on the reactor vessel.

16 The GALL specifies a volumetric inspection
17 of the standby liquid control nozzle. The Dresden and
18 Quad Cities ISI programs which cover these components,
19 or this component, has a relief request to the ISI
20 program.

21 The current program allows for a visual
22 inspection of the inner radius of a nozzle weld, and
23 that is attributed to the fact that the weld is not
24 accessible to volumetric inspection equipment. Hence
25 we have an exception.

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1 A second example deals with the fuel oil
2 chemistry program. In general, the exception for this
3 program are the result of different ASTM standards
4 recommended by the GALL versus those followed by each
5 site. However, the ASTM standards followed by Dresden
6 and Quad Cities do assure the quality of the fuel oil
7 will remain high.

8 An example of an exception between the
9 different standards deals with the size of filters
10 used in the testing of particulates. The standard
11 that Dresden and Quad Cities use, for instance, uses
12 a much smaller particulate filter, .8 micron, versus
13 3 as recommended by the standard or the GALL.

14 The last example relates to the inspection
15 of overhead heavy load handling systems. The GALL
16 does recommend that the licensee track the number and
17 the magnitude of lifts made by the heavy load handling
18 cranes, such as the reactor building or turbine
19 building cranes, and then review those lifts to ensure
20 that the fatigue limits are not being approached.

21 There are administrative controls in place
22 at Dresden and Quad Cities to ensure that the load
23 lift capacities are not exceeded. Those
24 administrative controls, however, do not record the
25 number or the size of the lifts. However, the only

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1 components large enough to approach the design loads
2 of the reactor building cranes at either site are
3 components such as the reactor head, the drywall head,
4 the shield blocks, for instance, that cover the
5 drywall during operation.

6 These components are only moved during
7 reactor disassembly, and the heavy load cranes are
8 designed for approximately 100,000 lifts at rated
9 load. So our usage of these load handling systems
10 will never exceed the limit, if you do out the math.

11 These are typical examples of the type of
12 exceptions that we have cited.

13 DR. FORD: Okay, I was just about to ask
14 the staff, is the question of this exception on the
15 BWR penetration inspection -- will that be discussed?

16 MR. KIM: We hadn't specifically planned
17 on it, but we do have a tech staff here present who
18 can talk about it during our period.

19 DR. FORD: Okay, during your period then.
20 It's just I am questioning how appropriate it is, just
21 because you can't inspect it by volumetric, what is
22 the risk?

23 MR. ELLIOT: This is Barry Elliot. I
24 don't know -- what's your name?

25 MR. STACHNIAK: Rob Stachniak.

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1 MR. ELLIOT: Rob is reading from the -- I
2 believe, from their original application. We didn't
3 agree with what was in the application. We told them
4 that we do not approve relief requests as part of the
5 license renewal process, and we requested that they
6 commit to do the inspections according to the code, as
7 far as the license renewal process, which would be a
8 volumetric examination, and they have committed to do
9 that.

10 Now when it comes to the time, if there is
11 no techniques available to do the volumetric
12 examination during the actual license renewal period,
13 then we will consider relief requests. But we do not
14 do that as part of this process.

15 DR. FORD: Okay. I understand.

16 MR. STACHNIAK: Thank you for that
17 clarification. We agree totally.

18 DR. BONACA: I had a question regarding
19 some exceptions, for example, in your fire protection
20 program and your fire water system. I'm not sure my
21 objection is about the exceptions you have taken.
22 Maybe my concern is about the prescriptiveness of the
23 GALL and how somebody who is in the middle like myself
24 is left, when I see a negotiation.

25 The example is, you know, there are a lot

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1 of exceptions you have taken regarding the frequency
2 of the inspections.

3 MR. KIM: Yes.

4 DR. BONACA: Now you know, so GALL says
5 you should perform inspection at least once every
6 refueling outage, and you say you do it every five
7 years. You should do inspections at least bi-monthly
8 for holes in the skin of the door, and you do it once
9 per cycle, so on and so forth, and they accept it.

10 Now when I read the GALL, I don't see that
11 kind of elasticity in it, because it seems to be very
12 prescriptive. Now either there is a problem in the
13 way that GALL is too prescriptive, and maybe something
14 has to be done to provide some considerations, or I am
15 left with some kind of question in my mind. You know,
16 how come?

17 If you really believe that it is so
18 important to do it a regular frequency, why is doing
19 it, you know, on a much less frequency always the
20 acceptable?

21 MR. KIM: I think I can try to answer
22 that.

23 DR. BONACA: Also, the water systems, and
24 the testing of the water systems for the fire
25 protection, the requirement for testing to design

1 pressure, and they don't do it, and you find it
2 acceptable. So I am left with questioning on why is
3 it acceptable, and here is some explanation, but not
4 very much.

5 MR. KIM: Let me try to answer that, and
6 I'm sure Dr. Kuo will correct me if I'm wrong here.

7 Yes, in some cases the staff has found
8 that the GALL is very prescriptive. So there is an
9 effort ongoing based on the license renewal
10 application reviews that we have done -- Dresden and
11 Quad Cities is the 14th one. There is a lot of
12 experience that the staff has gained.

13 So there is an effort going right now to
14 upgrade the GALL Report to incorporate some of the
15 lessons learned, such as these.

16 As far as the individual exceptions that
17 the applicant has taken on specific aging management
18 programs, those exceptions were carefully reviewed by
19 the staff based on justification that was provided
20 with the application or to a response to --

21 DR. BONACA: In many cases, a response
22 seems to be visible. But again, I have no sense -- I
23 mean, in some cases I would expect the GALL expects
24 more frequent inspection, because the plant is getting
25 older. So in some cases one may say, no, we want to

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1 have them more frequent, because.

2 This wasn't the case here, and I was left
3 with this problem between the prescriptiveness in GALL
4 and a lot of elasticity in the way that you reviewed
5 it and accepted the longer intervals, lesser flows and
6 so on.

7 MR. KUO: Dr. Bonaca, just to supplement
8 what T.J. just mentioned, the update of the GALL is
9 ongoing, and that is one of the objectives, to broaden
10 the GALL criteria, acceptance criteria. So the case
11 you just pointed out is one of them that may be too
12 prescriptive. So we are trying to update the GALL to
13 provide a range in the acceptance criteria, so that we
14 don't -- the staff doesn't have to provide
15 justification every time there is a small variation.

16 DR. BONACA: I believe that. Thank you.

17 MR. STACHNIAK: Now let's move on to Slide
18 Number 19. My next topic is the chemistry of
19 groundwater found at both sites and its impact on
20 buried concrete structures.

21 The groundwater at each site is sampled
22 once every five years, and shown on the slide is the
23 historical range of the pH, the chloride and the
24 sulfite values for the entire plant history. In each
25 case, you can see that the values are not close to the

1 aggressive limits stated in Chapters 3 or 4 of the
2 GALL for concrete structures.

3 DR. ROSEN: What has been your experience?
4 I know you do a lot of work at these sties and, no
5 doubt, have excavated the subgrade. What have you
6 seen?

7 MR. STACHNIAK: Unfortunately, I don't
8 have that information with me.

9 MR. BOHLKE: Elliott, can you comment on
10 your respective sites about any underground commodity
11 issues?

12 MR. PORTER: Bill Porter. Most of the
13 excavation we do at the site is small, and we do it
14 now with suction to make sure that we don't damage
15 equipment and so forth. So is your question
16 pertaining to the condition of equipment that we see
17 or the chemistry?

18 DR. ROSEN: Concrete, mainly.

19 MR. PORTER: We have not found many
20 concrete problems. We have some water leakage -- not
21 leakage, but leech-age that is addressed, I think, in
22 the report I saw, as far as looking in the buildings.
23 But we haven't found extensive other problems with the
24 excavation we have done.

25 MR. FLICK: This is Elliott Flick. It's

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1 been a similar experience at Dresden.

2 MR. STACHNIAK: Now I'd like to move on to
3 Slide Number 20. Finally, I would like to summarize
4 the status of the open items and the confirmatory
5 items contained in the draft SER.

6 The SER has five open items, and Exelon
7 has provided a formal response to each of these. As
8 of this morning, the staff considers one of the five
9 open items as closed. The remaining open items are
10 currently under review by the staff.

11 The SER also contains confirmatory items.
12 All but one are closed, and the staff is reviewing the
13 documentation provided to close this one remaining
14 item.

15 As to the respective regional inspections
16 and NRR audits, all technical issues have been
17 resolved. There is one open issue from the regional
18 aging management inspection concerning the adequacy of
19 action tracking files associated with the license
20 renewal commitments, and there is a follow-up
21 inspection scheduled late in May to assess the
22 corrective actions.

23 DR. ROSEN; So now your discussions on
24 these four open items that are under review are
25 ongoing with the staff? You have submitted responses

1 to them to their concerns that were expressed in RAIs,
2 because these are -- Let me just characterize them as
3 they struck me when I read them as fairly significant,
4 not your run of the mill open items.

5 So there is some relative sense of unease
6 I have compared to other applications with the
7 importance of these open items.

8 MR. STACHNIAK: I understand. We have
9 been submitting -- We have submitted responses to the
10 staff and then discussed the responses and, if
11 necessary, we have revised them and then provided the
12 responses under oath and affirmation.

13 At this point in time, the staff has all
14 of our answers, and there is one additional piece of
15 information that will be provided next week regarding
16 the scoping increases from the change in methodology.
17 Other than that, we believe we have reached closure on
18 everything.

19 DR. ROSEN: Reached closure? You mean you
20 have the staff's agreement, you think?

21 MR. STACHNIAK: We are waiting for the
22 staff's agreement, but we believe it is coming. Yes.

23 DR. ROSEN: Well, because these issues are
24 -- For example, the upper shelf energy values for the
25 limiting beltline materials -- now that's pretty

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1 important stuff.

2 MR. STACHNIAK: We agree.

3 MR. POLASKI: And the calculations have
4 been done for that and submitted to the staff that
5 show that those numbers are acceptable. It's just a
6 matter now of getting final review from the staff.

7 MR. BOHLKE: That title may be misleading.
8 We are talking about one capsule in one Quad Cities
9 unit.

10 MR. KIM: Dr. Rosen, we are going to be
11 talking about those issues.

12 DR. ROSEN: Okay. We will hear more about
13 those then.

14 DR. BONACA: I had a question here, more
15 just for information, regarding scoping. In the
16 service water -- in service air system and those
17 things, the HVAC system, you have some non-safety
18 related, two safety related components, and you did
19 include in aging management all those components and
20 scope that are Class I service components.

21 MR. STACHNIAK: Yes.

22 DR. BONACA: To the exclusion -- but you
23 did not include the compressors. Could you explain to
24 me how you divided that scope? It's just more for
25 information than anything else. I did not understand.

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1 MR. PORTER: So we are clear, you're
2 talking about instrument air system?

3 DR. BONACA: Yes.

4 MR. PORTER: Instrument air, service air.

5 MR. STACHNIAK: In the case, for instance
6 -- Let's discuss instrument air. From the
7 compressors, all of the equipment that drives the air,
8 up to those points of isolation where you now go into
9 Class I, those systems were all designed as fail safe.
10 In other words, their failure will place the plant in
11 a safe condition, and it would not affect any safety
12 function.

13 Therefore, we felt no need to put those
14 pieces of equipment in the scope of the rule or apply
15 any aging management for them.

16 DR. BONACA: By fail safe, however, does
17 it mean that the isolation valves of the safety
18 related system would close?

19 MR. POLASKI: The design is that isolation
20 valves fail in a closed condition. So you don't need
21 air to close them. Those components that require air
22 to operate like main steam relief valve or main steam
23 isolation valve -- the design is such that they have
24 accumulators and check valves that isolate that part
25 to the air system from the supply.

1 So the only part that is safety related is
2 from a check valve to the operator on the valve, and
3 that part is in scope.

4 DR. BONACA: Okay. And you did the same -
5 - and they understand -- the same logic you used for
6 the HVAC system for all the others?

7 MR. POLASKI: Yes.

8 MR. STACHNIAK: Yes. In the case of
9 dampers and so forth, yes, absolutely.

10 DR. BONACA: Okay. I wanted to understand
11 that.

12 MR. STACHNIAK: At this time I would like
13 to turn the presentation over to Fred Polaski who will
14 talk about commitment management.

15 MR. BOHLKE: Mr. Chairman, I think we have
16 less than 10 minutes to go in our presentation. This
17 should go fairly quickly.

18 CHAIRMAN LEITCH: Okay, good. Let's press
19 ahead.

20 MR. POLASKI: On our use of the commitment
21 management process for control of commitments on
22 licensure, I am on Slide 21. I just want to clarify
23 one thing on what I am going to talk about as far as
24 commitments are concerned.

25 In the draft safety evaluation report in

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1 Appendix A is a list of license renewal commitments.
2 These are very high level commitments that align very
3 closely to the aging management programs that we have
4 credited.

5 What I am going to talk about on
6 commitments are the actual implementing procedures and
7 inspections that we are going to perform in the plant
8 that actually implement those programs, and there's
9 over 1,000 specific implementing tasks that we
10 consider commitments, and each of these, we consider
11 a specific commitment in Exelon's commitment
12 management process.

13 These are also treated the same as any
14 other commitments we have made to the NRC. It is
15 controlled by a -- Our process is controlled by an
16 Exelon procedure that is consistent with NEI
17 Guidelines for Managing Commitment Changes," and all
18 of these commitments are documented in the commitment
19 tracking system database.

20 There is also as part of that process a
21 formal process in place for review and approval of any
22 changes to the commitments, which could include prior
23 NRC approval.

24 We will go on to Slide 22 to discuss how
25 we use the specifics of our commitment managing

1 process as it applies to license renewal.

2 We have assigned for each aging management
3 program a unique commitment tracking number and a
4 tracking file has been created for each procedure,
5 work request, periodic surveillance, all of which,
6 when I talk procedures, I am going to use an all-
7 encompassing way that is more than just what you would
8 consider a formal procedure, maybe a preventive
9 maintenance active, maybe a work request, but we treat
10 all of those, and we have annotated of them as
11 commitments for license renewal in our commitment
12 tracking process.

13 What I'd like to do then is just show you
14 one example of how that works. So we go on to Slide
15 23. I am going to be talking about action tracking
16 items, and we have an action tracking process that
17 controls commitments, any commitments that come out of
18 our corrective action process, commitments we make to
19 the NRC, commitments we made as part of license
20 renewal.

21 This process includes identification of
22 issues, resolution, closure, and documentation of all
23 of these, and these are tracked through what we call
24 action tracking items or ATIs.

25 So if you take a look at the chart here --

1 and this represents it for Quad Cities, and there is
2 a similar hierarchial setup for Dresden. For Quad
3 Cities we have assigned one action tracking item, ATI
4 #101562. It is the master action tracking item for
5 license renewal.

6 We then have assigned sub-items for each
7 of the aging management programs. For example,
8 101562.02 is the action tracking file for water
9 chemistry; 101562.33, selective leaching; and .34 is
10 the aging management program for buried piping and
11 tanks, and I would like to use this as the example.

12 Each of these action tracking files at a
13 program level is made up of implementing procedures.
14 Water chemistry has 12, selective leaching 18. Buried
15 piping, I believe, has 14, and they start out numbered
16 .01, which is this particular procedure.

17 I am going to talk about .11, which is our
18 procedure SA-AA-117, which is our procedure for
19 excavation, trenching and shoring. So we will go on
20 to Slide 23 -- or the next slide, 24.

21 This is actual steps and text lifted out
22 of procedure SA-AA-117. Step 4.7 is a step for
23 exposing underground piping, structural steel or
24 concrete during excavation, and there are steps in
25 here to notify Engineering to perform inspections when

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1 these components are exposed because we are doing some
2 excavation.

3 This entire step, 4.7, has several
4 commitments attached to it. CM-4 is the one I want to
5 talk about particularly for licensure renewal for Quad
6 Cities.

7 The second page here is from later in the
8 procedure, and this is our list of references. Under
9 Quad Cities Reference 6.1.4 for Quad Cities is CM-4.
10 This is action tracking item 101562.34.11. If you
11 remember from the previous slide, that's the number
12 that I showed you for this particular procedure, and
13 it's the license renewal aging management commitment
14 that references NUREG 1801 in the GALL procedure.

15 The next on this page is CM-5, which is
16 also where we have committed to this a second time in
17 another program. These are the two commitments for
18 Dresden relating to license renewal, and this one, CM-
19 2, is our commitment for the Peach Bottom license
20 renewal application for license renewal. So this is
21 a corporate procedure that is used at all 10 of our
22 nuclear sites for doing excavating.

23 So we have used this in all of the plants,
24 and I expect as we go forward and do other license
25 renewal applications, this list, CM-2, 3, 4, 5 and 6

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1 will just continue to grow as we credit this program
2 for other license renewal applications.

3 So we go on to Slide 25.

4 MR. BARTON: Before you do, you said
5 notify Engineering. Is there a sign-off? Is there a
6 hold point? How do you know you notified Engineering
7 to do the inspection, because I know of places where
8 it says notify Engineering when you excavate
9 something, because they are going to inspect piping,
10 look for electrical penetrations or whatever. It
11 hasn't been done, and there's been damage done, and
12 the holes got covered back up. Everybody says, oh,
13 Christ, the procedure or we screwed it up. How are
14 you going to preclude that?

15 Just say notify in generic. Doesn't say,
16 you know, hold point. There's no sign-off there.
17 It's a note in the procedures.

18 MR. POLASKI: It's a step in a procedure
19 that has to be completed, and it's notify --

20 MR. BARTON: It's steps, plant procedures
21 for the same thing. Go back. Tell me how you are not
22 going to miss that step. It's just a note.

23 MR. POLASKI: Well, no, it's a procedural
24 requirement. Engineering inspect piping or structural
25 steel for evidence of coating degradation or

1 corrosion, inspect concrete. So this step goes on.
2 I didn't copy it all in here, but there's steps that
3 Engineering has to do that work.

4 MR. BARTON: Is there a sign-off there for
5 Engineering that they've done it or something?

6 MR. POLASKI: In this corporate level, I
7 don't remember the exact --

8 MR. BARTON: Okay. Because I know this is
9 where we get the same note and similar kind of
10 procedures, and it hasn't been done at other stations.
11 I'm not saying you've done it.

12 MR. POLASKI: Elliott would like to
13 address that.

14 MR. FLICK; IN many of the cases we would
15 have at the station level a station implementing
16 procedure that references back to this procedure that
17 would have the required sign-offs that would end up in
18 the actual work package that's being implemented in
19 the field.

20 MR. BARTON: Okay. This is not the actual
21 work procedure. This is a higher level?

22 MR. POLASKI: This is the corporate
23 procedure that implements the process, yes.

24 MR. BARTON: All right.

25 MR. POLASKI: So we go on to Slide -- This

1 is Slide 25. So this is the actual action tracking
2 file for this procedure 101562.34.11, which provides
3 information about what is done as part of that
4 commitment. Here is the procedure that is utilized to
5 do it, and the references to action tracking item
6 101562.34 which is for the program.

7 So if we go to Slide 26, I'm not going to
8 walk you back up the ladder, if you will, in the
9 hierarchial structure. So this is the ATI for the
10 aging management program for buried piping
11 inspections.

12 In here we have specific information, and
13 this is a multi-page document within our database for
14 commitment tracking. So I've just highlighted some of
15 the more significant parts.

16 Again management activities are credited
17 for components exposed to soil and/or groundwater. We
18 then talk about the scoping. Buried ferrous portions
19 of a significant number of different systems, and we
20 are also looking at buried mechanical joint rubber
21 gaskets that are contained in the fire protection
22 piping.

23 Slide 27, we keep on going and talk about
24 the aging effects for dealing with loss of material,
25 change in material properties and how we manage that,

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1 cuttings and wrappings, periodic inspections, and
2 pressure testing.

3 For each of those, there is a significant
4 discussion on how that manages aging. So here is a
5 discussion for coatings and wrappings.

6 We go on to Slide 28. Here is a
7 discussion for periodic inspections and pressure
8 testing.

9 DR. BONACA: By the way, I really was
10 impressed by this program.

11 MR. POLASKI: Pardon?

12 DR. BONACA: I was impressed by your
13 program, because GALL only requires opportunistic
14 inspections, and many applicants have really stood
15 behind that commitment only. I think, although you
16 have no aggressive groundwater, you have taken this
17 seriously. I think this is impressive, that you have
18 a program to do more than just purely opportunistic
19 inspection. It may be something that GALL should
20 consider.

21 MR. KUO: Sure thing.

22 MR. POLASKI: I guess, just to wrap up on
23 the commitment process, we have taken an approach that
24 the information that what we committed to in the
25 license renewal application and in any RAIs will be

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1 available through our plant staffs in the future. But
2 what we have done is in these action tracking items
3 take the significant things of what we are committing
4 to, what aging effects we want to manage, how we are
5 managing them, put them in this action tracking file
6 so they are readily available to the staff engineers,
7 so when they come up to a question of changing a
8 procedure or there could be a commitment we've made
9 where maybe techniques have improved and there's new
10 and better ways to do things, they will have the
11 references readily available to them as what we
12 committed to in the past. And if they want to change
13 that commitment to make some improvements, for
14 example, they will have that information.

15 They can go back to the source documents,
16 but they are rather extensive and voluminous, and this
17 gives us the information that is important right into
18 the procedures.

19 So any questions?

20 CHAIRMAN LEITCH: Excuse me, John, go
21 ahead.

22 MR. BARTON: No, that's all right. I just
23 thank him for an explanation.

24 CHAIRMAN LEITCH: As you know, one of the
25 ACRS concerns is the implementation, the timely

1 implementation of these programs. I guess what
2 concerns us is that, if one were to wait until the end
3 of the current license period to begin the
4 implementation of these programs, it would not only
5 present an unreasonable burden on you but on the staff
6 as well.

7 Can you make some comment now or, if not,
8 when you come back to the full committee, could you
9 make some comment about just what is the status of the
10 implementation of these programs?

11 MR. POLASKI: I can do that right now.
12 The majority of the aging management programs that are
13 required for licensure already exist, and we have made
14 some enhancements and improvements where we provide
15 more information on the aging effect of the inspected
16 techniques to be used. But a lot of those inspections
17 are already being implemented.

18 We have added some new inspection
19 programs, but if I characterized it on volume of
20 inspections, probably 98-99 percent of all the
21 inspections that we are doing are already existing in
22 place today.

23 We are currently going through a process
24 of building all of these action tracking items with
25 all the information. The procedures have already

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1 been annotated and/or changed, if they needed to be.
2 So everything is in place.

3 We have already built into the work
4 management program, addressed it in Quad Cities, these
5 inspections, so that that information is in it. It
6 was recognized not only the concern from what if you
7 want until the last minute to do this, but we realized
8 that for Dresden with the license expiring in 2009, we
9 don't have a lot of time to get all those done, if
10 there's new things, and to make sure that they are
11 being done with the new criteria. So that's all been
12 built in, so that it is not an unnecessary burden on
13 the plant at the last minute.

14 You don't want to wait until the last
15 minute to do any new inspections anyway. So those
16 have already been built in. I'd say the majority of
17 the new inspections are one-time inspections that we
18 are committing to where we are doing that to be able
19 to show to ourselves that the chemistry programs we
20 have had in place have been adequate. We believe that
21 they are adequate, but we are going to do these one-
22 time inspections just to confirm it.

23 So all of this -- The only thing that is
24 left to do for Dresden and Quad is to finish
25 populating these action tracking item files so that

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1 all that information that I showed you here exists for
2 all of them. We are working through that. We expect
3 to have that done sometime later during the summer.

4 CHAIRMAN LEITCH: Thank you. Did you have
5 some concluding remarks or is that the end of your
6 presentation?

7 MR. BOHLKE: So let me just summarize what
8 we have -- the major points of the last couple of
9 hours.

10 We believe we submitted a high quality
11 application for the two stations, and one which we
12 believe, including the discussion we have had,
13 effectively uses the GALL Report, the first time we
14 think the GALL Report have been used in a boiling
15 water reactor license renewal application.

16 This is our second application. You can
17 see how we are building in the program. We've got
18 more teed up. We will be here again.

19 The staff has performed a very thorough
20 review, and I'm sure if you have gone through the
21 draft, you have seen the depth of their comments. It
22 is a thorough review. We have had very comprehensive
23 and probing inspections with positive interactions
24 with staff at the stations.

25 We have developed what we believe are

1 strong aging management programs. We have given you
2 a hint of that. Fred just talked about that, which
3 are in place to take us through extended operation,
4 and for the programs that we have deployed, our
5 experience and feedback from those systems so far has
6 been positive and substantiates that they are well
7 designed.

8 Again, we touched on this long term asset
9 management program which gives us the strategic
10 approach to make sure that the plants overall are
11 being effectively maintained, high material condition,
12 for purposes of being safe and reliable generators of
13 electricity.

14 Thank you for your time this afternoon and
15 your many probing questions. That concludes the
16 Exelon presentation.

17 CHAIRMAN LEITCH: Okay, thank you. Does
18 any of the committee have any questions at this time?
19 You fellows are still going to be in the room, though,
20 for the next part of the presentation.

21 MR. POLASKI: We will be here.

22 DR. BONACA: These plants must have been
23 SEP plants. Right?

24 MR. STACHNIAK: Yes. Dresden Unit 2 was
25 an SEP plant. Correct.

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1 DR. BONACA: And not Quad Cities?

2 MR. STACHNIAK: I do not believe so.

3 CHAIRMAN LEITCH: Okay, let's take a break
4 until quarter to three, and we will resume with the
5 staff's presentation at that time.

6 (Whereupon, the foregoing matter went off
7 the record at 2:25 p.m. and went back on the record at
8 2:41 p.m.)

9 CHAIRMAN LEITCH: Let's come back in
10 session now, and we will turn it over to the staff for
11 their portion of the presentation. T.J., are you
12 going to begin?

13 MR. KIM: Yes.

14 CHAIRMAN LEITCH: Okay, good. Thank you.

15 MR. KIM: All right, Mr. Chairman, members
16 of the Committee, thank you very much for this
17 opportunity.

18 My name is T.J. Kim, and I am the lead
19 Project Manager for the staff responsible for
20 coordinating staff review of the license renewal
21 application from Exelon for Dresden and Quad Cities.
22 With me at the table is Kimberley Corp. She is
23 another Project Manager who has been helping me out on
24 this review, and Laura Kozak from Region III is also
25 here, who is going to speak to inspection related

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1 issues later on during the staff presentation.

2 Let's go to the next slide, please.

3 This is an overview slide, and I believe
4 Exelon had touched on most of the issues that are
5 covered here. I just want to briefly mention that the
6 application, which actually covers both Dresden and
7 Quad Cities, is a single application. I just wanted
8 to clarify that.

9 It was dated January 3, 2003, and 2957
10 megawatts thermal represents or reflects the uprated
11 power level, 17 percent for Dresden and 17.8 percent
12 for Quad Cities, as it was mentioned earlier.

13 CHAIRMAN LEITCH: T.J., do you have any
14 comment on considering license renewal applications
15 where the plants are somewhat dissimilar like this?
16 As I did the review, I found it a little bit
17 confusing, but probably not as confusing as it would
18 have been to do two separate applications, because I'm
19 talking about the difference between RCIC and
20 isolation condenser and shutdown cooling versus
21 shutdown cooling just being a mode of RHR.

22 So there are a number of places where I
23 thought it was a little tedious, because you have to
24 keep bouncing back and forth: Is that Dresden? Is
25 that Quad? But yet I think the overall efficiency was

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1 probably better this way than doing it twice. I was
2 just wondering about your thoughts.

3 MR. KIM: Yes, I would agree with you on
4 that. There are enough -- Obviously, there are some
5 differences between Quad Cities and Dresden, but there
6 enough similarities, and obviously they are the same
7 vintage plants, and with enough similarities I think
8 it is far more efficient to have a single application,
9 and with the highlighting the differences, as they
10 have done. I think that was very efficient.

11 MR. BARTON: I would agree, T.J. I think
12 it is probably the best way to submit this
13 application, even though you had some differences and
14 back and forth. I look at this, and I say, well, you
15 know, one coming down the pike which is going to be
16 two different BWRs which are really different. Nine
17 Mile and Fitzpatrick, I think, are coming in on the
18 same application, aren't they?

19 MR. KIM: I don't think so.

20 MR. BARTON: Two Nine Mile plants or
21 something?

22 MR. KIM: Well, Nine Mile 1 and Nine Mile
23 2 might be coming in.

24 MR. BARTON: And they are different
25 plants.

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1 MR. KIM: Yes.

2 MR. BARTON: That is going to be even more
3 challenging than this.

4 MR. KIM: That's right, but in the case of
5 Dresden and Quad, I would say what they have done is
6 a pretty efficient way to do it.

7 CHAIRMAN LEITCH: Okay.

8 MR. KIM: Next slide, please.

9 The points on this slide was also
10 mentioned earlier, but let me just go through that
11 real quickly. The current licenses expire for Dresden
12 Unit 2 in 2009, which is obviously about five years
13 away. So it's really not that far. Dresden Unit 3,
14 2011, and Quad Cities 1 and 2, 2012. Exelon has
15 requested 20-year extension to the current operating
16 licenses for all four units.

17 DR. ROSEN: And there is the answer to the
18 question earlier. Both of them on the same day, Quad
19 Cities 1 and 2?

20 MR. KIM: That's correct. That's correct.
21 It is somewhat unusual, but that was the case for Quad
22 Cities.

23 As it was mentioned earlier, Dresden and
24 Quad Cities' application for license renewal is fourth
25 in a series where they have modeled their application

1 after the recommendation of GALL Report. Fort
2 Calhoun, I think, was the first one, Robinson, Summer,
3 and then Dresden-Quad Cities. Next slide, please.

4 At the time the draft safety evaluation
5 was issued back in February, as you know, there were
6 five open items and 16 confirmatory items. I think
7 it's -- There were some questions about the timing of
8 the issues, when they were first raised, and that kind
9 of stuff. So let me -- I think it is worthwhile to
10 cover the timelines very briefly.

11 Of the five open items, four were
12 generated from staff RAIs, and one came up during an
13 inspection. All five issues were surfaced, if you
14 will, around July 2003 time frame. So I would say we
15 did have ample time, both the applicant and the staff
16 had ample time to address those issues.

17 Another perspective that I would put on
18 the table here is that through the staff's review, we
19 have initially issued 265 RAIs by about July 2003 time
20 frame, and applicant responded to all 265 RAIs by
21 early October, October 3rd, I believe.

22 Then, obviously, staff went through the
23 licensee's -- which were a lot of RAIs, 265, went
24 through in a relatively short period of time, and the
25 staff was able to issue 265 issues down to about 100

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1 right around November-December time frame of 2003.
2 Then by working very closely and judiciously with the
3 applicant, by the time the draft SER was issued in
4 February, we were able to get it down to five open
5 items.

6 MR. BARTON: How does 265 compare to the
7 other GALL applications?

8 MR. KIM: They are right there with other
9 GALL applicants. I think Ginna had a little bit less,
10 like 225. I'm just going by memory here, obviously,
11 and Robinson, I think, had about 300 RAIs.

12 MR. BARTON: I'm just wondering, you know,
13 since people are now coming in with GALL whether the
14 RAIs would go down, but sounds like they are all about
15 the same.

16 MR. KIM: Another thing you have to keep
17 in mind, though, as I mentioned, Dresden-Quad Cities
18 was the fourth application following the GALL format,
19 but actually when they start preparing the application
20 it was all around the same time. So I don't believe -
21 - Maybe Exelon can correct me if I am wrong here, but
22 I don't believe they had the time to incorporate
23 lessons learned from, let's say, Fort Calhoun or
24 Robinson, for example, because they were fairly close
25 together.

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1 CHAIRMAN LEITCH: I think the hope for
2 reduction in RAIs caused by following the GALL process
3 has only occurred, if at all, to a very limited
4 extent. I think what we are really hoping to see is
5 the new procedure, which I guess we will see the first
6 cut of that at Farley, I think it is.

7 MR. KIM: Right.

8 CHAIRMAN LEITCH: Where a lot more of the
9 review activity is done at the site and, hopefully,
10 some of these RAIs which may actually be trivial or
11 misunderstandings or something like that, can be
12 resolved before they get to the RAI.

13 MR. KIM: That's exactly right. Our
14 management, as you know, is working very hard at
15 bringing in those efficiencies through the new
16 process, starting with Farley-A in '02 and DC Cook.

17 MR. LEE: This is the first batch, Fort
18 Calhoun and Robinson addressing GALL? It's the first
19 batch that have time to adjust to the GALL model. So
20 they are down to 275, 250. Before, we are like in the
21 300, 350. So it's down a little bit. Then the next
22 batch is the Farley, DC Cook, and the indication we
23 have for Farley right now, less than 175. And that's
24 the first one and, hopefully, the number will come
25 down after Farley.

1 CHAIRMAN LEITCH: Thanks, Sam.

2 MR. KIM: And while we are on the subject,
3 let me get on the soapbox a little bit. Efficiency is
4 very important. Like I said, my management is really
5 trying hard to address that issue, but I just wanted
6 to point out that, while the staff is doing the
7 review, I think, it is very important to keep in mind
8 that we want to maintain a questioning attitude, on
9 the other hand, along with the efficiency, to make
10 sure the staff is continuing to do a very thorough
11 review and inspections with license renewal.

12 CHAIRMAN LEITCH: Well, as I look to the
13 SER on pages roughly 70 through 90, there were a
14 number of RAIs there, shutdown cooling, RHR, reactor
15 water cleanup. And it looked like many, many of those
16 were small pieces of piping associated with those
17 systems that in Unit 1, for example, were not included
18 in the scope, and Unit 2 were or Dresden, it was, and
19 Quad Cities, it wasn't. And it seemed like the
20 answers frequently came back, oops, we just forgot to
21 highlight this or we highlighted it in the wrong
22 color.

23 MR. KIM: That's correct.

24 CHAIRMAN LEITCH: I guess it just gave me
25 a feeling that maybe some of that work had been done

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1 in a careless fashion perhaps. I don't know if you
2 had any of that. So I mean, it looked a lot of those
3 RAIs that were generated were quite easily answered,
4 but they were just little mistakes. I'm not talking
5 main piping. I'm talking little drain piping or other
6 vents and things like that that seemed to be just some
7 questions about consistency. Did you have that same
8 reaction?

9 MR. KIM: Yes. As you pointed out, many
10 of the staff's RAIs on scoping and screening portions
11 of the application were about the differences between
12 Quad Cities and Dresden or between the units within
13 the same station, where one unit, for example, a piece
14 of piping included in the scope of license renewal,
15 whereas the same system, same piping was not.

16 In many cases, those turned out to be an
17 error on the applicant's part, and in hindsight
18 perhaps they should have done a better QA review of
19 the application.

20 MR. BARTON: Well, there was a similar one
21 in Section 2 that we talked about earlier on reactor
22 and cooling water which is similar to that, where it
23 was not an RAI and the staff didn't pick it up, but
24 yet in the LER they talked about reactor and closed
25 cooling water systems at both Dresden and Quad Cities,

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1 and there's a reference table of items in those
2 systems that are, you know, in the aging and has been
3 programmed, and under -- in that Table 331 it lists
4 tanks.

5 Now you think about what tanks are in the
6 RVC-CW systems. Well, the only one I can think of is
7 an expansion tank. But yet, if you look at the table,
8 it says Dresden only. You say, well, isn't there an
9 expansion tank in Quad Cities, and is the tank in
10 scope or not, and it's really not that clear. You
11 know, why is it Dresden only and not Quad Cities?
12 It's a similar thing. You guys didn't pick it up in
13 your SER, and it was not an RAI.

14 So I wrote it down as something that I
15 didn't understand.

16 MR. KIM: I don't have an answer for you
17 on that.

18 MR. BARTON: I'll give you my comments.
19 You guys can look into it. It's Section 23. It has
20 to do with the RVC-CW system described in the LLA and
21 the table that it references to the components. It
22 says tanks, but it says Dresden only, and you know,
23 maybe they are not even talking about the expansion
24 tank. I don't know, but I don't know any other tanks
25 in the RVC-CW system. So, to me, it's another kind of

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1 issue that Graham brought up.

2 MR. KIM: Okay.

3 MR. BARTON: It's in my notes. You'll get
4 a copy of them.

5 MR. KIM: Okay. We'll take a look at
6 that. Thank you.

7 Since the application, there are a few
8 systems and a number of additional components that
9 were brought into the scope of license renewal by the
10 applicant as a result of the staff's RAIs and open
11 items that we talked about earlier, especially the
12 open items that touches on the scoping issues.

13 So the list is still increasing in terms
14 of the additional systems and components that are
15 being brought into the scope of license renewal, and
16 there is one piece of that the applicant is still
17 working on right now to get us the latest information.

18 As a result of staff's inspection and
19 audit and the staff's review, the applicant added four
20 new aging management programs since the submittal of
21 the application. I am going to go over those later in
22 the presentation.

23 CHAIRMAN LEITCH: I had a question about
24 a document that we received dated March 5, '04, about
25 the FSAR update.

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1 MR. KIM: Right.

2 CHAIRMAN LEITCH: And there's a number of
3 things that have changed over the time that the
4 application has been pending.

5 MR. KIM: Right.

6 CHAIRMAN LEITCH: And they are documented
7 in this document. I guess this came in after the
8 draft SER that was reviewed. So it does not reflect
9 these things.

10 MR. KIM: Obviously, the March 4th memo
11 that you -- or letter that you are looking at was not
12 reflected in the staff's draft SER which was issued
13 back on February 14th, I believe.

14 Now that letter that you are referring to,
15 I believe, is a further requirement of Part 54 where
16 we require each applicant to update on an annual basis
17 any new -- any changes to the current licensing basis
18 that may materially affect the application for license
19 renewal.

20 CHAIRMAN LEITCH: Right. That is usually
21 one of the standard license conditions, more or less.

22 MR. KIM: Yes, sir.

23 CHAIRMAN LEITCH: The last paragraph of
24 that letter said something that was confusing to me.
25 It says -- It's just a format issue. It's not a

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1 technical issue. It says, "The pages revise the
2 result of this annual update also reflect those
3 changes due to RAI responses that affected the same
4 pages. Because Appendix A is provided in its
5 entirety, all RAI related changes are included in the
6 Appendix. However, changes to other LRA pages that
7 resulted only from RAI responses are not included in
8 the annual update." It sounds very confusing. It
9 sounds like--

10 MR. KIM: I think what Exelon did there
11 is, as part of that submittal to update their
12 licensing basis changes since the application, what
13 they have done was they included entire -- revision to
14 Appendix A to the original application, which is a
15 USFAR update for license renewal in its entirety as a
16 result of all the RAIs and things like that.

17 So, basically, they combined two issues
18 into a single document.

19 CHAIRMAN LEITCH: It sounds like that they
20 were reviewing the pages. If they are revising the
21 pages anyway, they did, but if they weren't revising
22 the pages, they didn't. I just don't understand.

23 MR. POLASKI: This is Fred Polaski at
24 Exelon. Let me try to clarify that.

25 When we respond to RAIs we receive from

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1 the staff, that can result in changes to the
2 information that's in the license renewal application.

3 CHAIRMAN LEITCH: Sure.

4 MR. POLASKI: Just based on answers to
5 RAIs, we do not revise the application document. So
6 that the document actually is the original application
7 plus all RAI responses. We don't go back and update
8 the pages or the document that the NRC has.

9 CHAIRMAN LEITCH: Right.

10 MR. POLASKI: When we went through the
11 process of looking for changes to the plant, changes
12 to the current licensing basis, which is the annual
13 update that we are supposed to do, which materially
14 impacts the application, those pages that were
15 affected because of changes to the plant that we
16 submitted to the NRC as part of that letter, we not
17 only included the changes to the plant which impacted
18 the application, but we also included changes that
19 would have occurred to those pages based on RAIs.

20 So that when the staff got those revised
21 pages, they included the original information as
22 modified by RAI responses plus the annual update. So
23 that the staff wasn't getting one document that didn't
24 have RAI responses, another one that did, to try to
25 eliminate confusion from that.

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1 CHAIRMAN LEITCH: If you guys understand
2 that, that's fine. But it seemed to me that you are
3 going to have some pages now with RAI -- with the
4 information from the RAIs updated, if it happened to
5 fit on that page, but if it is on another page, the
6 RAI information would not be updated.

7 MR. POLASKI: Well, like I said, we have
8 not -- and I don't believe any applicant has --
9 continuously updated the application with RAI
10 responses, so that the application includes the
11 application plus all the other changes.

12 It was a decision we made just to try to
13 avoid confusion where the staff would get a revised
14 page or page with revisions in it, and then they
15 looked at it and said, well, why didn't you include
16 the information you gave me three months ago in an RAI
17 response. So we included those.

18 CHAIRMAN LEITCH: Well, if you fellows
19 find that helpful, it's certainly okay with me. I am
20 just somewhat confused by it. That's all. I don't
21 have a technical problem. It's just a formatting
22 issue.

23 MR. POLASKI: I guess the other part to
24 that was we had seen what we consider a fairly
25 significant number of changes to the program

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1 descriptions in Appendix B which was going to go in
2 the FSAR. So we chose -- and we had built these up,
3 and this was a good time -- to resubmit that whole
4 section to the application to say this is as we see it
5 today, and this is what we will implement in our next
6 biannual update to the FSAR; because there had been a
7 lot of changes to those program descriptions based on
8 RAI responses, and we needed to get those in front of
9 the staff as to what those were going to be like.

10 So rather than doing piecemeal, we just
11 saved them up and did them all at one time and decided
12 to submit it with the annual update at the same time.
13 So you get two totally separate things in the same
14 submittal letter to the NRC.

15 CHAIRMAN LEITCH: Okay. Thanks, Fred.

16 MR. KIM: Next slide, please.

17 Okay. In addition to the in-office
18 tabletop reviews conducted by the staff -- By the way,
19 for license renewal application review, we have over
20 30 technical staff within the Office of NRR that's
21 involved in the review, and in addition to that, we
22 have contracted subject matter experts from three
23 different national laboratories, BNL, Argonne, PNL,
24 for example. So we have substantial brain power, if
25 you will, behind doing the review.

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1 What this slide shows is that, in addition
2 to those tabletop reviews, we have conducted a number
3 of audits and inspections as part of the license
4 renewal program. Let me just go through that real
5 quick.

6 We've done a scoping and screening
7 methodology audit where we focused on applicant's
8 source documents in developing their methodology.
9 That was done back in May. Then NRC Region III
10 inspection staff has done a team inspection of scoping
11 and screening results.

12 Then NRR staff did an aging management
13 program audit back in October. Then Region III
14 conducted a team inspection looking at the aging
15 management review and aging management programs from
16 the implementation aspect or perspective, if you will.
17 That aging management inspection was done one week at
18 Quad Cities on site and another week it was done at
19 Dresden on site.

20 We have recently, back in March, conducted
21 an optional inspection which Laura Kozak is going to
22 talk about a little later, and we are also planning a
23 follow-up inspection in May-June time frame.

24 So this summarizes all the inspections and
25 audits.

1 CHAIRMAN LEITCH: Now is Laura going to
2 talk about some of these inspections? I have a couple
3 of questions here.

4 MR. KIM: Yes, sir.

5 CHAIRMAN LEITCH: Okay.

6 MR. KIM; Okay, next slide, please.

7 Section 2.1 of the application addresses
8 the scoping and screening methodology. In the staff's
9 review, this includes in-office review plus the audit
10 that I mentioned earlier that was done back in may at
11 the applicant's engineering office.

12 The staff focused on whether the applicant
13 has met the criteria addressed in the rule itself,
14 54.4, and also we focused on the criteria that was
15 outlined in the staff's SRP plus the NEI's 95.10
16 guidance on scoping and screening.

17 Based on that review, we have identified
18 two open items which, by the way, Exelon talked about
19 earlier. Let's go to the next slide, please.

20 CHAIRMAN LEITCH: Could you just go back?

21 MR. KIM: Sure. We are going to talk
22 about the two open items

23 CHAIRMAN LEITCH: Okay, go ahead.

24 MR. KIM: Again, these were briefly
25 mentioned earlier by Exelon. The first issue deals

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1 with the spatial interaction of non-safety related
2 system piping on nearby safety related components.

3 Initially in their application, the
4 applicant took a position that anything beyond 20 feet
5 -- It's a non-safety related piping separated from the
6 safety related component by more than 20 feet were
7 okay from any potential spraying concerns, an the
8 staff has challenged that thought and asked -- or
9 through RAIs asking for justification.

10 That took a lot of time going back and
11 forth, question and answers, and eventually it became
12 an open item, and as you heard earlier from Exelon,
13 they have changed position, and now they are going
14 back and relooking at the methodology to include much
15 of -- In other words, they excluded -- They took out
16 the 20 feet separation criteria that they had used
17 and, thus, they have included -- brought in a lot more
18 system piping into the scope of license renewal.

19 As a result of that, they are still
20 developing the additional systems and piping
21 components that are going to be brought into the
22 scope. Okay, that's the first issue.

23 The second issue for scoping methodology
24 came up during Region III's inspection where an
25 inspector identified licensee's methodology in

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1 addressing license renewal boundary for non-safety
2 related piping attached to the safety related piping.

3 Initially, the applicant took a position -
4 - took an approach that, since as you heard before for
5 addressing Quad Cities and for plants of that vintage,
6 they don't have seismically qualified pipe anchors, if
7 you will, on the non-safety related portion of the
8 piping that are attached to the safety related piping.

9 Thus, they took an approach where they, I
10 think, used the term equivalent anchor, where they
11 took the license renewal boundary out to the first
12 pipe restraints or supports in each orthogonal
13 direction, if you will, and included up to that point
14 the non-safety related portion of the piping into the
15 scope of license renewal.

16 The staff challenged that, primarily
17 asking the applicant to confirm that position as
18 consistent with their design and licensing basis, and
19 based on the staff's prompting, the applicant has done
20 a much thorough-er look-back at their licensing and
21 design basis and came back and said the licensing
22 basis seemed to indicate that they should take the
23 license renewal boundary out to a second equivalent
24 anchor, if you will.

25 So that is the latest position that Exelon

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1 has provided to the staff, and staff has looked at it,
2 and we are satisfied with that. Again, as a result of
3 that change in methodology, additional components or
4 pipe segments are being brought into the scope of
5 license renewal. Yes?

6 CHAIRMAN LEITCH: The scoping and
7 screening inspection, I thought, had two open items,
8 one having to do with the topic you just discussed.
9 The other one says at the close of the inspection, the
10 applicant was evaluating the switchyard buses for
11 inclusion in the scope of the rule. Has that been
12 resolved?

13 MR. KIM: Yes. Laura Kozak is going to
14 address that.

15 MS. KOZAK: This is Laura Kozak. It was
16 listed as an open item in the scoping and screening
17 inspection. It was part of the RAI process at the
18 same time. If you read that through, it says that we
19 will evaluate that in the aging management inspection.

20 It was evaluated, but it was never
21 documented as closed. So in our third follow-up
22 inspection, it is documented as closed. It was within
23 the scope and did receive an aging management review,
24 and that is documented through the RAI process also.

25 CHAIRMAN LEITCH: Okay, thank you. So

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1 that issue is closed now?

2 MS. KOZAK: Yes. That issue is closed.

3 CHAIRMAN LEITCH: Was this issue part of
4 this issue that most applicants seem to be having
5 problems with; that is, how much of the switchyard
6 should be included in the scope of license renewal?
7 Was that the issue or is it something else?

8 MS. KOZAK: To my knowledge, this was a
9 separate issue.

10 MR. KIM: Well, I think the issue that you
11 were thinking of stemmed from one of the ISGs
12 addressing the station blackout. That's a separate
13 issue.

14 CHAIRMAN LEITCH: Okay. My question was
15 really, hasn't that ISG resolved this issue? I'm
16 surprised to see that is still coming up, but I guess
17 it's not the same thing. It's a different issue.
18 Okay.

19 DR. ROSEN: These plants have station --
20 AT least one of them -- Maybe they both have station
21 blackout diesels.

22 MR. KIM: They both do.

23 DR. ROSEN: Right. So the issue was
24 different here than it has been elsewhere. But I
25 didn't see any discussion in the application or the

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1 SER of there being issue relative to that ISG. If
2 that went through the switchyard configuration with
3 the station blackout diesels, then it's okay.

4 MS. KOZAK: That's right.

5 CHAIRMAN LEITCH: There wasn't enough
6 detail in this. I didn't really understand. It just
7 said switchyard. I wasn't really clear what the issue
8 was. Thank you.

9 MR. KIM: Okay. Any other questions? All
10 right, I am on Slide Number 9, and Section 2.2 of the
11 application addresses a plant level scoping results.
12 This is at a high level system and structures.

13 Staff's review of this section did not
14 result in any open issues or confirmatory items.

15 CHAIRMAN LEITCH: Now I remember talking
16 about scoping of structures, there was a problem at
17 Quad Cities about eight years ago where a tornado came
18 through and ripped some panels off the reactor
19 building and sheet metal panels were flying around and
20 coming down into the switchyard or had the potential
21 to come down into the switchyard. I don't remember if
22 they actually did or not.

23 I think what they found was that these
24 panels were -- They were not intended to be blow-off
25 panels. They were intended to be blow-out panels.

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1 They were supposed to open, and there was some kind of
2 a device, like a spring-loaded device, that hadn't
3 been maintained, and I guess it went for years and
4 years, and then the tornado came along, and they
5 didn't release, and it tore the panels off.

6 I just didn't see any -- I thought these
7 devices might have been in the scope for structures.
8 Do you recall if that came up at all?

9 MR. KIM: Not personally.

10 CHAIRMAN LEITCH: It's a detail, but it
11 did present a fairly significant problem at that time.
12 You know, if we don't know the answer to it now, I
13 think maybe at the full Committee meeting, I'd like to
14 hear some more about that.

15 MR. KIM: Yes, sir, we can follow up on
16 that.

17 CHAIRMAN LEITCH: Unless the applicant
18 knows anymore about that situation.

19 MR. KIM: Was there any damage done to the
20 superstructure or it just --

21 CHAIRMAN LEITCH: No, as I recall, it was
22 just the sheet metal panels that tore off the side of
23 that.

24 MR. BARTON: It's got something to do with
25 the fasteners weren't installed or weren't installed

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1 right or something was wrong with them, and that's how
2 the panel blew out.

3 CHAIRMAN LEITCH: Yes, I thought it was --
4 You know, I mean, I'm thinking about an aging thing
5 where they hadn't been properly looked at or
6 maintained.

7 MR. BARTON: I don't remember whether it
8 was that or they weren't installed or something,
9 because I remember we had to go and look at ours. So
10 the NRC put something out as a result of that.

11 MR. KIM: We will definitely follow up on
12 that for the full Committee meeting.

13 MR. BARTON: If it's an aging thing, you
14 wonder why they didn't include it in the scope then.

15 MR. KIM: That's the question. We'll take
16 a note of that. We will get back to you.

17 CHAIRMAN LEITCH: It was on the reactor
18 building, just sheet metal panels.

19 MR. KUO: Super structure.

20 CHAIRMAN LEITCH: Right.

21 MR. KIM: Okay, slide Number 10, please.

22 Section 2.3 of the application addresses
23 scoping and screening results for mechanical systems.
24 That includes reactor vessel, internals, RCS, ESf,
25 auxiliary systems and steam and power conversion

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1 systems. There were no open or confirmatory items.

2 CHAIRMAN LEITCH: Now there was one thing
3 here that really puzzled me, and I'll find my note
4 here in a second. But at one of the plants, the
5 turbine auxiliaries were not in the scope, and in the
6 other they were. Here it is. The SER on page 2-40
7 says the turbine oil main generators and auxiliaries
8 screen in at Quad Cities only, not at Dresden.

9 I can't imagine why they are in at one
10 place and out in the other.

11 MR. KIM: Okay. I need one of my
12 technical staff to confirm my understanding, but I
13 think that is because I think it was scoped in for
14 Quad Cities. Right?

15 CHAIRMAN LEITCH: It was.

16 MR. KIM: Right, and that was because of
17 the proximity to a safety related equipment in the
18 turbine building. I believe it was a breaker, safety
19 related breaker that is located within close enough
20 proximity that licensee has to scope that system in.

21 MR. POLASKI: This is Fred Polaski. Those
22 differences were because of scoping for a non-safety
23 related could interact with safety, and just different
24 plant configuration brought in different non-safety
25 related equipment from one plant to the other.

1 CHAIRMAN LEITCH: Okay. Thanks.

2 MR. KIM: All right, next slide, the
3 dreaded steam dryer issue. Let me talk high level of
4 where we are in terms of reviewing this issue, and I
5 might ask Dave Terao of our technical -- Mechanical
6 Engineering Section Chief to supplement my comments.

7 In license renewal space, steam dryers, as
8 with steam separators, are not generally in the scope
9 for license renewal. As you are well aware, they are
10 a non-safety related component, and up until now we
11 haven't seen any operating experience that suggests
12 these dryers could fail in such a way that we have
13 seen at Quad Cities.

14 The staff -- Based on last three years of
15 experience at Quad Cities and Dresden, the staff has
16 determined that Quad Cities and Dresden, to some
17 extent, are unique among other boiling water reactors.
18 What we mean by that is the design of the steam
19 system, main system steam, including the dryer plus
20 the steam line configuration and the size of the steam
21 line, for example -- I think, at Quad Cities --
22 correct me if I am wrong -- the steam lines are 20
23 inches in diameter, much smaller than typical other
24 boiling water reactors which are in the 25 to 26 inch
25 in diameter, which causes, obviously, much higher

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1 steam velocity and, in turn, putting more load on the
2 steam dryer.

3 So that's what we mean by the staff --
4 Based on what we know right now, it appears that Quad
5 Cities is unique in this regard.

6 DR. WALLIS: Well, maybe there are many
7 other ones that are unique, because they all have
8 particular features. So perhaps -- Vermont Yankee may
9 be unique, but the question is unique in what way.
10 Does it promote failure of certain parts or not?

11 MR. KIM: Well, as I said, one thing that
12 is clear so far is that the size of the steam line at
13 Quad Cities is much smaller than other boiling water
14 reactors.

15 DR. WALLIS: I guess, if you look very
16 carefully at any plant, you are going to find
17 something that's different.

18 MR. KIM: Oh, sure. Sure.

19 DR. WALLIS: I'm not quite sure what you
20 mean by saying it is unique.

21 DR. FORD; It is my understanding that
22 General Electric has done an analysis of all the steam
23 dryer designs to see whether this in fact is unique.
24 Do you happen to know what the results of that
25 evaluation were?

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1 MR. KIM: I'll ask Dave Terao to address
2 that.

3 MR. TERA0: This is David Terao. Yes, I'll
4 try to answer that.

5 Actually, by unique what we are talking
6 about are a couple of things. One is that the
7 sensitivity of the team dryers, the failures -- You
8 are right. G.E. did do a sensitivity assessment, and
9 it turns out that Quad Cities and Dresden are the most
10 susceptible of the BWRs.

11 DR. WALLIS: Oh, so they are uniquely
12 susceptible.

13 MR. TERA0: Yes. Well, that is one aspect
14 of it, because they have a square-hooded dryer. They
15 also have a very high main steam flow velocities. I
16 believe it is 200 feet per second, which is much
17 higher than what we typically see. Usually, high
18 velocities would be about 150 feet maybe to 175 feet
19 per second.

20 The other aspect that we find unique about
21 Quad Cities is that it is the only steam dryer that we
22 know of that has catastrophically failed to generate
23 the loose parts. We have to recognize that other
24 steam dryers have had cracking throughout, even before
25 power uprates, usually due to IGSCC and sometimes

1 fatigue, but these type of failures are just usually
2 small cracks.

3 Sometimes, like in Susquehanna, we found
4 that they had a rather large crack within about a year
5 from when they initially started operation, and
6 recently Nine Mile Point 2 has had an 18 inch crack in
7 their steam dryer. But these are relatively small
8 cracks.

9 Nine Mile 2 was -- it was just along the
10 weld and maybe about an eighth of an inch wide. There
11 was blow-through, but it certainly wasn't the type of
12 opening that we had seen at Quad Cities, and it
13 certainly did not generate any loose parts.

14 So from that aspect, we feel that Quad
15 Cities -- There's something different going on at Quad
16 Cities, and we haven't put our finger on what it is.
17 Exelon is doing -- is currently performing testing to
18 develop data and running the Quad Cities units above
19 EPU power to take some data to try to understand the
20 loadings better on the dryer.

21 So we have yet to see the results of this
22 testing. So we believe from that aspect the dryers
23 are unique at Quad Cities, and that typically for
24 other BWRs all we see are just very minor cracks that
25 don't generate loose parts.

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1 DR. FORD: But so we don't really know
2 what the margin is before you go into some sort of
3 resonance at this particular E-2 -- or Quad Cities
4 compared with other plants, and you are quite correct.
5 There have been other stress corrosion cracking
6 problems in various subcomponents of the steam dryer,
7 and also the attachment welds to the pressure vessel,
8 which gives rise to the question as to what about the
9 loose parts, including the whole steam dryer.

10 We brought this up, oh, two years ago. I
11 seem to remember the categorization of it not being a
12 safety related item. I think it was VIP-04. One of
13 the documents categorizes this as not a safety related
14 item. But no one seems to address the loose parts
15 analysis as not being a particularly important thing,
16 and I can never understand that disposition of that
17 particular problem.

18 MR. TERAQ: Well, as far as the loose
19 parts go, you are right. There is a BWR VIP document.
20 It is Number 06, which addresses -- It's more of a --
21 I'll call it a cascading effects due to -- from
22 failures, and it looks at the different components
23 inside a reactor vessel.

24 It was actually addressed as part of the
25 IGSCC cracking. So it looked at all the safety

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1 related items within the vessel. It also looked at
2 the steam dryer as well. In addition, there was a
3 discussion about loose parts in the VIP 06 document.

4 The staff accepted the VIP 06 document,
5 but at this point the BWR VIP is reassessing that
6 portion of their document, and we expect to see the
7 results of that, if there is going to be a revision,
8 I believe, sometime this spring or this summer.

9 CHAIRMAN LEITCH: The SER, draft SER, page
10 248, says -- summarizes, I guess, in summary fashion.
11 It says, "The steam dryers are not in scope, because
12 loose parts will not interfere with the ability to
13 isolate the main steam line."

14 If we've found loose parts on the turbine
15 stop valve springs --

16 MR. TERAQ: The staff is revising that
17 portion of the safety evaluation.

18 CHAIRMAN LEITCH: Okay. It sounds like
19 this is still a pending issue, and this is one of the
20 ones that we will absolutely need to get clear what
21 the final situation is when we have the full Committee
22 meeting on this docket.

23 MR. TERAQ: That's correct, and I believe
24 in the first week of May the staff is going to be
25 giving a presentation to the ACRS on steam dryers and

1 EPU failures that we have seen so far, a status of
2 where we are today.

3 DR. WALLIS: So what does that second
4 bullet have to do with the first one? If they are not
5 in scope, you don't have to worry about them? What
6 does the second bullet have to do with the first one?
7 To change the scope in some way?

8 MR. TERA0: Well, what we are saying is
9 that, if we didn't have the loose parts being
10 generated at Quad Cities, and if we only had the
11 cracking at Quad Cities that we see at other BWRs, and
12 certainly the failure of the steam dryers, the
13 cracking of the steam dryer alone cannot affect the
14 functioning of safety related SSCs. If that is the
15 case, then it is not within the scope of license
16 renewal, even though steam dryers are non-safety
17 related.

18 DR. WALLIS: So the steam dryers are not
19 in scope for Dresden like this or are the jury still
20 out?

21 MR. KIM: It is an evolving issue right
22 now.

23 DR. ROSEN: Only the parts of steam dryers
24 that end up in the bottom of the vessel or in the main
25 steam isolation valves --

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1 DR. WALLIS: Or somewhere else.

2 MR. TERAQ: I do want to point out -- Let
3 me just that this issue, of course, the failure of the
4 steam dryers, is an issue that cuts across operating
5 reactors, EPUs, as well as license renewal. We are
6 not trying to resolve it as part of license renewal.
7 We are trying to resolve it as current issues, and
8 Exelon, as well as the staff, certainly does not want
9 to operate their reactors generating these loose parts
10 for another 20 years.

11 MR. KIM: Absolutely. Thank you, Dave,
12 because that is the point I was trying to make. The
13 staff fully recognizes this is a very serious issue,
14 and we are closely following Exelon's corrective
15 actions in this regard.

16 As you may be aware, Exelon has submitted
17 a letter to the staff on April 2nd, I believe, making
18 various commitments, one of which was to hold a power
19 level, reactor power level, at Quad Cities, both units
20 of Quad Cities, at the pre-EPU level and conduct
21 numerous tests to figure out what is causing the
22 problem, and then develop appropriate corrective
23 actions accordingly.

24 Now let me say this, though. It depends
25 on how this issue evolves, and it depends on how the

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1 staff concludes what the right way to go. In license
2 renewal space, if there are any long term commitments
3 that are made to address this issue by Exelon, then
4 those commitments may very well carry over into the
5 license renewal term, as appropriate. But as Dave
6 mentioned earlier, this is a current operating issue,
7 and we are not going to -- That is not going to wait
8 until year 2009 for Dresden, for example, to address
9 this issue.

10 CHAIRMAN LEITCH: The only thing that is
11 not a current operating issue is whether the dryers
12 are or are not in scope, and I don't know that we can
13 productively discuss that much further except to say
14 we need to hear a definitive answer to that when we
15 come back to the full Committee.

16 MR. KIM: That's right.

17 DR. WALLIS: As far as coming into scope,
18 if they come in scope for these, then why not for the
19 other license renewals which are coming along; because
20 I'm not sure --

21 CHAIRMAN LEITCH: That's when you get to
22 the second issue, just are these unique, and how
23 unique are they or is it a generic issue?

24 DR. ROSEN: Well, you are arguing that it
25 wasn't the EPU that necessarily caused these issues.

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1 It was just aging perhaps, and I think you are right.
2 There is no -- It's not clear which of these things.

3 There is only circumstantial evidence that
4 it was related to the EPU.

5 DR. BONACA: One thing I would like to
6 say, though. On a general level, as I pointed out
7 this morning, it is very hard to segregate license
8 renewal and modifications of the plant, because again
9 the practical experience that is being credited for in
10 all these programs may be somewhat less applicable in
11 some cases, just because the plant is operating in a
12 different regime and different temperatures and flow
13 rates and so on.

14 MR. KIM: That's right. That's a very
15 good point.

16 DR. BONACA: And you pointed out this
17 morning that you would --

18 MR. KIM: Address that or try to address
19 it. let me say this. It is very true. Especially
20 the extended power uprates are a fairly recent
21 development, especially when you talk about power
22 uprates in the range of 17 percent, 20 percent. I
23 believe the NRC has started approving those in early
24 2000, and addressing Quad Cities, I believe the
25 approval went out in 2001, if my memory serves me

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1 right.

2 So there is -- The bottom line is there is
3 a very little operating experience with extended power
4 uprate. That is very true. Having said that, the way
5 the staff approached review of license renewal
6 application for Dresden and Quad Cities was to make
7 sure that all the parameters, operating parameters,
8 reflected the 20 percent uprated conditions.

9 So we looked at very closely their aging
10 management review section of the application to make
11 sure -- and there are numerous RAIs that went out just
12 to confirm, for example, reactor vessel embrittlement
13 issues: Have you considered embrittlement at the 20
14 percent uprated power level versus the original level?

15 So we took great care in making sure that
16 the licensee's application reflected the true
17 condition of the uprated power level. That is one
18 aspect.

19 I also wanted to mention that -- you may
20 be aware of this -- Office of Research at NRC is -- or
21 has been conducting research on potential synergistic
22 effects of large power uprates combined with aging,
23 for example. I think they also include high burnup
24 issues and increasing the uprating cycle.

25 DR. BONACA: Well, they were planning to

1 study it.

2 MR. KIM: Yes. My understanding is that
3 that has been funded, and the research program is
4 ongoing. So, yes, we are fully -- the staff is fully
5 aware of the potential issues that are out there and,
6 as we learn more, we do have a process in place, like
7 ISG, for example. As we become aware of these
8 potential issues, we will screen those issues out and
9 develop corrective actions accordingly.

10 DR. FORD: If I could just make one last
11 plea. It seems as though you are readdressing this
12 question about the steam dryer and the consequences of
13 failure. When you do that in evaluation, you just
14 don't concentrate on vibration, but you look at all of
15 degradation, stress corrosion cracking, the effect of
16 vibration on stress corrosion cracking; because those
17 modes will not be mitigated by noble chem or hydrogen
18 water chemistry in the top head.

19 MR. KIM: Right. But the problem here is
20 that this dryer was not even looked at, because it was
21 screened out in the scoping process.

22 DR. FORD; I know, but my understanding is
23 you are going to relook to see whether it should not
24 be in the scope.

25 MR. KIM: Yes, sir. That is correct.

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1 DR. FORD: And as you go through that
2 process, then bear in mind those other physical
3 phenomena.

4 MR. KIM: Absolutely. Absolutely.

5 CHAIRMAN LEITCH: Okay, let's move on. I
6 think we've spent enough time on this one.

7 DR. ROSEN: Except for the bottom line,
8 the bottom line being when is the license renewal
9 application scheduled to be approved?

10 MR. KIM: Final SER is scheduled to be
11 issued by July 26th for addressing Quad Cities, and
12 the ACRS full Committee meeting would be roughly a
13 month after that.

14 DR. ROSEN: So the end of August, say.

15 MR. KIM: The end of August or early
16 September is probably when.

17 DR. ROSEN: We are going to have to have
18 some sort of resolution to these issues or at least
19 some sort of hook to put into the letter on steam
20 dryers by then.

21 MR. KIM: Let me just throw this out.
22 There is a possibility that, if we can't come to a
23 resolution on this issue by that time, we may explore
24 an option of putting in a license condition in the
25 license renewal relative to the steam dryer or the EPU

1 related issues. I don't know what that is going to be
2 right now.

3 CHAIRMAN LEITCH: I think you have had a
4 concern in this area, and I think we ought to just
5 move on here or we will not have time for the rest of
6 the discussion.

7 MR. KIM: Okay. The next section, Section
8 2.4 of the application, specifically addresses scoping
9 and screening of structures, and in addition to the
10 containment structures, the application addressed 15
11 other structures like reactor building, turbine
12 building, control room, cribhouse and so forth.

13 Staff has no open or confirmatory items.

14 MR. BARTON: Let me ask you on that. In
15 that section there is a discussion on drywell
16 corrosion, refueling floor seals, bellows, etcetera.
17 As I understand what you have written in the SER, is
18 that the applicant has agreed to do some UTs, I guess,
19 of the drywell plates.

20 MR. KIM: Yes.

21 MR. BARTON: To look for corrosion, and
22 also has committed to monitoring the sand bed drain
23 lines during refueling flood-up.

24 MR. KIM: Yes.

25 MR. BARTON: All right. I got a problem,

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1 because I think just monitoring the sand bed drain
2 lines during refueling flood-up is not going to really
3 tell you much, because experience where people have
4 had leakage between the bellows on the refuel floor
5 and the drywell plates and the sand bed have resulted
6 from a small amount of leakage over many years, and
7 you do not find gushers running out of sand bed
8 drains.

9 What you do find is small cracks in
10 bellows or the welds, the attachment welds of the
11 bellows to the steel in the refuel floor. All right?
12 Top of the drywell.

13 I don't understand how what the applicant
14 has proscribed as his looking at this satisfied this,
15 because there could be corrosion going on there for
16 years and years and years, and you are not going to
17 see water running out of sand bed drains.

18 They also committed to do some UTs, and
19 I'd like to know what UTs they are going to do and how
20 do they know what the UTs are going to do really shows
21 the results of any corrosion that is going on.

22 I know the way we found there was
23 corrosion going on is by actually drilling eight-inch
24 holes or 23-something-inch holes and sending little
25 people in to remove sand to find corrosion on drywell

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1 plates, and you do UTs at the plate and you find out,
2 oops, you know, my plate is going away.

3 So I don't know what has been proscribed
4 here as the program, how you are satisfied with it.

5 MR. KIM: Okay. My recollection is the
6 staff accepted that issue based on the licensee's
7 commitment to do a UT exam. But let me ask Hans
8 Ashar.

9 MR. BARTON: Tell me all about this UT
10 exam.

11 DR. BONACA: It was done last year, right,
12 in 2002, I thought, a commitment?

13 MR. KIM; Yes, I think so.

14 DR. BONACA: To perform UT?

15 MR. KIM: Yes. Hans, can you address
16 that?

17 MR. ASHAR: Let me start this way, that we
18 did address a number of RAIs to the applicant
19 regarding this particular issue, because their
20 experiences is in only one area, and that is in
21 Dresden 3 they had experience, some corrosion in the
22 area of the sandpocket area, which has been done in
23 Oyster Creek in that area.

24 Because of that experience, they found
25 that they also had corrosion in that area. Now the

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1 probable cause for that water coming into the
2 sandpocket area is, as explained before, something
3 went from the refueling cavity into the vertical part
4 of the drywell and into the sandpocket area on a long
5 term basis.

6 Now that is the reason we tried to get
7 something more from the applicant: What is the root
8 cause for happening this? The applicant in response
9 told us that, hey, we have a little different layout
10 of the refueling cavity as well as the bellows and the
11 way the plate is attached, and they did not think that
12 that was the main cause of the water, but they could
13 not at the same time explain as to where the water
14 came from in that Dresden 3 event.

15 They don't have that kind of experience on
16 Dresden 2 or the Quad Cities 2 or 3 -- Quad Cities 1
17 or 2. Now so we said, okay, but it appears that there
18 is likelihood that this can happen, and what can
19 happen is that the water leaking through the reactor
20 cavity would go into that area of the vertical part of
21 the drywell in the insulation area, and it can clog up
22 the insulation. It can -- On a long term basis, it
23 can create corrosion on the side we don't see in
24 regular service inspections.

25 That is the reason the applicant committed

1 to perform UT examination of one unit out of the four
2 units.

3 MR. BARTON: Well, but where is the UT
4 proposed -- that he proposed to do going to be done?
5 On what section of the drywell is the UT going to be
6 done?

7 MR. ASHAR: Yes. Only at the first part
8 of the -- The applicant said that they will be doing -
9 - I don't know exact number. I read it in the SE, but
10 I don't remember now. But it was close to about 15
11 random places in the vertical area, and then we said,
12 hey, why don't we do something in the spherical area,
13 too, because that is also subject to the same type of
14 phenomenon.

15 MR. BARTON: Well, see, the corrosion
16 really occurs in the spherical area which is buried in
17 wet sand.

18 MR. ASHAR: Oh, yeah.

19 MR. BARTON: That's where you have the
20 most corrosion.

21 DR. BONACA: This is not in the future.
22 In Appendix B under the program, it states that the UT
23 inspection is scheduled for the second half of 2002.

24 MR. BARTON: It's been done.

25 MR. BONACA: So it's been done. So there

1 should be some data with the information about it.

2 MR. ASHAR: Oh, I think we are talking
3 about the -- The UT part of the hole is being
4 committed in this commitment under license renewal.
5 What they have done earlier was to look at the
6 sandpocket area and cleaned out the drains from the
7 sandpocket to make sure the water goes out in case it
8 comes at all.

9 The second part is the area of the drywell
10 area between the concrete and the drywell -- vertical
11 part of the drywell and some part of the spherical
12 area. That is the part I am addressing right now, and
13 what they committed to under license renewal during
14 the extended period of operation. Am I clear in what
15 I am saying?

16 MR. BARTON: Yes, but I don't think -- You
17 know, I'm not happy with what you are saying, because
18 I don't know that you have proven that there is no
19 corrosion going on in the spherical area or the plates
20 that are sitting in maybe wet sand.

21 MR. ASHAR: Oh, you are still concerned
22 about the sandpocket areas?

23 MR. BARTON: Yes.

24 MR. ASHAR: Sandpocket areas -- they only
25 found --

1 MR. BARTON: Did they take all the sand
2 out of there? What did they do? Why won't there be
3 any corrosion in the sandpocket area? If there is a
4 leak up above coming down the vertical side and it
5 hits the spherical part and lays in the sand, why
6 won't there be corrosion?

7 MR. ASHAR: As a matter of fact, for that
8 area the applicant is given a TLAA on that one.

9 MR. BARTON: Given a what?

10 MR. ASHAR: TLAA, a time limited aging
11 analysis in 472, Section 472. Okay? And time limited
12 aging analysis says that the way they have performed
13 the time limited aging analysis, they have taken the
14 corroded part of one particular unit, and that is the
15 only place they have found the corrosion. And they
16 said that from up to 60 years -- even if they don't do
17 anything. That's what they are telling us. But they
18 are going to have a inspection program on a regular
19 basis for that area, if whatever is happening in
20 Dresden 3, is it being expanded? Is anything
21 happening to it?

22 They are also going to clean up the sand
23 drain area to make sure the water does not stagnate in
24 that area to cause corrosion. So there are a number
25 of things they have done in that TLAA. They are

1 expanding that TLAA.

2 MR. KIM: So it is a combination of time
3 limited aging analysis where the applicant has --
4 Based on the inspection data that they have so far on
5 the sandpocket area, of the UT data, they have
6 projected what the corrosion rate --

7 MR. BARTON: Over 60 years, and they will
8 still have enough plate?

9 MR. KIM: Right, and then they are going
10 to confirm that with a periodic UT examination.

11 MR. BARTON: Of where? The vertical
12 walls?

13 MR. KIM: No, no, no, the sandpocket area.
14 Correct?

15 MR. ASHAR: The sandpocket area.

16 MR. BARTON; How do they do UTs of the
17 sandpocket area?

18 MR. ASHAR: Let me explain a little more.
19 The sandpocket area is visible. They can take out the
20 sand and look at the surfaces as much as they want to
21 do, and they have done this, because it has been found
22 -- I don't even know what year, but it was been found
23 earlier, and they are monitoring it for a long time.

24 MR. BARTON: So they got sand removed and
25 they have access to the plate, and they can look for

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1 corrosion?

2 MR. ASHAR: They can look by regular
3 examination, yes. That is correct. They make an
4 access for that particular problem, yes.

5 MR. BARTON: I don't know how they are
6 doing that. Well, what are the access ports? Can you
7 guys answer this question?

8 MR. KIM: Yes. Exelon?

9 MR. STACHNIAK: Yes. This is Rob
10 Stachniak. Okay. Dresden Unit 3: In the lower
11 portion of the drywell, in the spherical portion of
12 the drywell, in the area that is surrounded by sand,
13 sand that can be wetted, there were 22 locations all
14 throughout the bottom of the drywell in which the
15 cement was core bored down to the liner, and then UT
16 thickness checks were made of the liner in that
17 susceptible location.

18 MR. BARTON: So you went through the
19 floor.

20 MR. STACHNIAK: Absolutely.

21 MR. BARTON: And so you got the inside of
22 the plate?

23 MR. STACHNIAK: Yes. Based on measures we
24 made, they were originally compared against the
25 drywell liner thickness. They actually showed nominal

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1 thickness hadn't changed.

2 Following that, we had numerous readings,
3 I believe, every outage, on this 22 locations, and
4 those results are included in the draft SER. All
5 those thickness measurements are in the draft SER.

6 In addition to those, we committed to
7 doing inspections of two other areas or general areas,
8 I should say, of the drywell. If you remember, the
9 containment is shaped like an upside down light bulb.

10 MR. BARTON: Right.

11 MR. STACHNIAK: We are doing inspections,
12 UT thickness checks of the plate in the upper
13 cylindrical walls and in the spherical wall below
14 that, directly adjoining below that. Does that answer
15 your questions?

16 MR. BARTON: Yes, I understand what you
17 are doing.

18 DR. BONACA: So this must be the augmented
19 UT inspection that is stated here?

20 MR. STACHNIAK: Yes.

21 MR. BARTON: But there is no intention to
22 do a one-time of the bellows area, look for cracks or
23 whatever?

24 MR. STACHNIAK: The bellows design is
25 shown so that when the bellows is flooded -- If there

1 were a problem, there are drain lines in which you
2 could detect the leakage. Yes, and that is all we
3 provided the staff.

4 MR. KIM: Next slide, please. Section 2.5
5 of the application addresses electrical and I and C
6 components. Applicant addressed these components in
7 a "spaces" approach, and they basically grouped all
8 the components, electrical and I and C components, in
9 three commodity groups, and there are electrical
10 cables and connectors, things like splices,
11 connectors, fuse blocks, terminal blocks.

12 Then the second commodity group that they
13 have identified is bus ducts, and the third commodity
14 group that they have identified for aging management
15 review is high voltage transmission conductors and
16 insulators.

17 In this area, the staff identified no open
18 or confirmatory items.

19 So to summarize our review of Section 2,
20 scoping and screening, other than the two open items
21 that we have discussed earlier about methodology
22 issues relative to two over one considerations, the
23 staff is satisfied that their scoping methodology and
24 the results of scoping and screening satisfy the
25 requirements of the rule as well as the criteria given

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1 in the SRP and the NEI Guidance 95-10.

2 CHAIRMAN LEITCH: The SER on page 2-105
3 discusses the CRD hydraulics, and the pumps are
4 included for Dresden only. I guess I am not sure why
5 the CRD pumps are not in scope for Quad Cities unless
6 it is a spatial issue as well, but I would think the
7 CRD pumps --

8 MR. KIM: Those are on the reactor
9 building.

10 CHAIRMAN LEITCH: I would think they would
11 be in scope per se.

12 MR. KIM: Right. Can anybody from the
13 staff answer that question? This may be an item that
14 we are going to have to get back to you on. Exelon?

15 MR. POLASKI: This is Fred Polaski from
16 Exelon. On Dresden, CRD pumps were included in scope,
17 because they were credited, as per Appendix R on
18 fires, as a high pressure source of water into the
19 reactor vessel, were not credited for Quad Cities. So
20 they come in under A-3 criteria.

21 CHAIRMAN LEITCH: Say that again, Fred.
22 Tell me about Appendix R again on Dresden.

23 MR. POLASKI: One of the criteria for
24 scoping under 54.4(a)(3) is fire safe shutdown,
25 Appendix R. Dresden credited the CRD pumps as a

1 source of water to the reactor vessel under Appendix
2 R scenarios. Quad Cities did not. So it's not a
3 system interaction with the other one. This is A-3
4 for fire safe shutdown.

5 CHAIRMAN LEITCH: And the other thing
6 similarly, I guess, the SER on page 2-113 talks about
7 reactor water cleanup and the pumps. The pumps do not
8 appear to be in scope. Now I know that the pumps
9 themselves, the rotating part of the pumps, are
10 active, but I thought the pump casings would be in
11 scope, and I just wonder if -- The pump casing are not
12 listed there as being in scope.

13 MR. KIM: Can anyone from the tech staff
14 address that? Or Exelon?

15 MR. STACHNIAK: This is Rob Stachniak.
16 The pumps were initially excluded because of spatial
17 interaction. However, the pumps were put in the scope
18 of the rule as a result of one of the RAI responses,
19 specifically crediting high NG line break, and it
20 deals with an RAI concerning -- I forget the words
21 here -- dealing with accidents, non-design basis
22 accidents credited in the CLB and high NG line break
23 was one of those.

24 So we included that after the application
25 was approved. So those pumps are now, yes.

1 CHAIRMAN LEITCH: Okay, thank you. I
2 guess I had another scope question, I guess, if that's
3 what we are dealing with now. On page 2-39, the
4 oscillation power monitor. It says it is not in
5 scope, because it is not enabled. I guess my question
6 was perhaps not exactly scope, because I would think
7 that is probably an active compounding anyway and
8 probably would not be in scope.

9 It raised the question in my mind, how
10 come you've got an oscillation power monitor that is
11 not enabled? I thought that was what we were doing to
12 prevent instability or are you preventing instability
13 some other way by operator actions or how are you
14 addressing that situation?

15 MR. BOHLKE: All of those where we have
16 installed oscillating power monitors, the initial
17 installation was for alarm only until we work through
18 the generic issues that I believe you are aware of on
19 the algorithms through which enabling for the actual
20 control of the unit would be worked out.

21 Now that that has been worked out
22 generically, seeing from us a succession of
23 applications which would cause those to be enabled
24 typically after refueling. So I've participated in
25 two reviews in the last month on those, and I don't

1 think either of those were at Dresden or Quad, but
2 they are on the way.

3 So they will be coming in through the LRA
4 route staff review. Probably you won't see them, but
5 that is how we are working it.

6 CHAIRMAN LEITCH: So those are likely to
7 be activated, I guess, is what you are saying.

8 MR. BOHLKE: Yes.

9 CHAIRMAN LEITCH: But even if they are
10 activated, it wouldn't be in scope, and that's not the
11 reason they are not in scope. they are not in scope
12 because they are -- It says they are not in scope
13 because they are not enabled, but really they are not
14 in scope because they are active. I mean active as
15 differentiated from passive.

16 DR. WALLIS: Well, if they are not
17 enabled, they are passive.

18 CHAIRMAN LEITCH: No, no. We need another
19 word. Active as differentiated from passive.

20 DR. WALLIS: They must be in scope if they
21 are not enabled, because then they are passive.

22 MR. KIM; We will follow up on that one.

23 DR. SIEBER: Well, it sounds like there's
24 two reasons why they aren't in scope. That's how I
25 interpret it, one because it is an active component,

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1 the other one is it's not in service.

2 CHAIRMAN LEITCH: That's correct.

3 DR. SIEBER: When you put it in service,
4 it becomes in scope except for the fact that it is
5 active. So it's not in scope.

6 DR. WALLIS: So the only time it is in
7 scope is when it doesn't work.

8 DR. SIEBER: It's just like the steam
9 dryer.

10 MR. KIM: Go ahead and move on? Okay.
11 Let me turn the floor over to Laura Kozak from Region
12 III who is going to go over the inspection related
13 issues and findings.

14 CHAIRMAN LEITCH: I must say, I find this
15 inspection to be an important part of this process.

16 MR. KIM: Yes, absolutely.

17 CHAIRMAN LEITCH: It really helps give me
18 confidence that things are okay.

19 MR. KIM: Right.

20 MS. KOZAK: Hi. My name is Laura Kozak.
21 I am from Region III. I am the current lead inspector
22 for license renewal inspections in Region III. I
23 joined the Dresden-Quad Cities second inspection, the
24 aging management program inspection, and I became the
25 team lead for the effort after that inspection when

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1 our previous team lead retired from the agency. So
2 that is kind of my history with license renewal
3 inspections.

4 This is the first Region III application.
5 So it is our first opportunity to implement the
6 inspection program for license renewal.

7 So I just have a few slides here to go
8 over the results of our inspections and also to review
9 current performance under the reactor oversight
10 program.

11 CHAIRMAN LEITCH: Could you skip to number
12 20, please, Laura? I think the intervening ones are
13 material that we are familiar with. It's just the
14 process.

15 MS. KOZAK: Sure. Number 20, sure. Yes,
16 a lot of it is gone over already.

17 The aging management program inspection,
18 which is the second inspection -- Our overall results
19 are that the material condition of both facilities was
20 being maintained adequately. We did not find any
21 signs of significant aging effects.

22 We did find that the documentation in
23 support of the license renewal application was good
24 quality and understandable and useful to us in our
25 inspections.

1 We did complete a third optional
2 inspection. T.J. also mentioned this. There were
3 four open issues from the aging management program
4 inspection, three of which had to do with specific
5 aging management programs and the actual implementing
6 procedures for those programs.

7 The fourth issue had to do with the
8 accuracy of some of the action tracking items that are
9 tracking the changes to the implementing procedures.
10 The three technical issues are the issues associated
11 with the programs. We were able to go out in March
12 and close all three of those inspection open items.

13 The fourth issue associated with the
14 action tracking items, you heard Exelon folks discuss.
15 They had told us that they were going to do a full
16 review and update of the action tracking items, and
17 when we went for the inspection in March, they really
18 had only completed a small portion of that activity.

19 So we wanted to wait until they had gone
20 through and done a sufficient amount of the programs
21 in the action tracking item so that we could sample
22 that. So that is currently scheduled for May 24th.

23 CHAIRMAN LEITCH: Okay. Now in the
24 scoping and screening inspection report on page 33, it
25 speaks about the Dresden Number 1 cribhouse structure.

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1 We talked about an issue similar to this before, but
2 I'm still not clear.

3 It says there that it is necessary -- It
4 is a diesel driven fire pump necessary to support the
5 operation of Units 2 and 3. Yet it is not in scope.
6 Why not?

7 MS. KOZAK: I don't have the answer to
8 that offhand. I would have to go back and look at
9 what we have written.

10 CHAIRMAN LEITCH: Okay. It's on page 33
11 of the scoping and screening inspection reports.

12 DR. ROSEN: Is this the jockey pump issue
13 again?

14 CHAIRMAN LEITCH: Well, I don't know.
15 Some of these things keep coming around, Steve. It
16 sounds like it might be part of the same thing.

17 MS. KOZAK: Well, it does house the fire
18 pump, which is in scope. That's true. Can Exelon
19 answer the question offhand?

20 CHAIRMAN LEITCH: Sure.

21 MR. POLASKI: This is the issue -- This is
22 Fred Polaski. This is the issue Rob talked about
23 earlier on Dresden 1 equipment. It supports it.

24 CHAIRMAN LEITCH: Yes.

25 MR. POLASKI: The Dresden 1 fire pump, the

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1 Dresden 1 screen wash pump both supply the fire
2 protection system. So the building that houses them,
3 the Unit 1 cribhouse, is in scope also. So all those
4 are in scope and subject to aging management, and they
5 are covered also by the maintenance rule program.

6 CHAIRMAN LEITCH: Well, maybe I'm
7 misreading this thing then. Well, it says -- I'm
8 reading page 33 of the scoping and screening
9 inspection report. It says the Dresden Number 1
10 cribhouse contains one of the two diesel driven fire
11 pumps required to support Unit 2 and 3 fire protection
12 system.

13 Then it goes on to say the remaining
14 structural component of the cribhouse is outside 10
15 CFR Part 54 rule requirements and, therefore, is not
16 in scope. The team agreed with this decision.

17 Now it's not that they are saying the fire
18 pump is not in scope. It sounds like there is a
19 structural part of the cribhouse that is not in scope.
20 I guess I'm just wondering why that is the case, if
21 the fire pump, diesel driven fire pump, is apparently
22 required -- It says it is required to support 2 and 3
23 fire protection system. Why wouldn't the structure
24 that houses those be in scope?

25 MS. KOZAK: I understand your question.

1 I just don't have an answer for you.

2 CHAIRMAN LEITCH: I don't need the answer
3 right now, but it's still --

4 MR. BOHLKE: As you know, any cribhouse or
5 screenhouse structure is a series of bays. So the bay
6 that is affected is in -- the pump is in with it. The
7 remaining structure is how we cut the pie up. We
8 think that adequately manages any aging effects for
9 that component and supporting structure.

10 CHAIRMAN LEITCH: Yes. Maybe if I clearly
11 pictured what this structure looked like, I might
12 readily agree with you, but I just don't.

13 MR. POLASKI: This is Fred Polaski.
14 Graham, I think what confused me was when they called
15 it a cribhouse. Think of it as a pump structure, and
16 it's got multiple pumps, diesel driven fire pump,
17 service water pump, emergency service water pump,
18 circulating water pump, each in separate bays.

19 So for purposes of Dresden 2 and 3, the
20 only equipment in --

21 CHAIRMAN LEITCH: It's only got one bay.

22 MR. POLASKI: It's that one bay, that one
23 port to the structure. So you may have other parts of
24 the building which house circulating water pumps for
25 Dresden 1 which is not in use. So that part of the

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1 building isn't in scope of the rule, because it
2 doesn't support any functions.

3 CHAIRMAN LEITCH: Okay, that's a good
4 answer. That's fine. I understand. I think some of
5 my problem is the term cribhouse is a little foreign
6 to me. We used to call them screenhouse.

7 DR. WALLIS: It's okay if the rest of the
8 building collapses?

9 DR. SIEBER: The pumps are in bays, but
10 the bays -- the top of the bays are open, and then
11 there was a sheetmetal roof on the top, and it seems
12 to me that to have the bay intact, the roof has to be
13 there, too, and the roof is continuous for the whole
14 building. So I'm not exactly sure how you separate
15 one bay from the rest of the building. The rest of
16 the building can fall down and the roof can come off,
17 but we're okay. It's just not clear.

18 CHAIRMAN LEITCH: Well, the staff looked
19 at it and was satisfied.

20 MR. BARTON: That doesn't say much. That
21 doesn't help me.

22 MR. KIM: We'll go back and take another
23 look at that.

24 CHAIRMAN LEITCH: The other question I
25 had: Quad Cities, particularly, used to have a

1 problem, and maybe they still do, with the Mississippi
2 River leaking into the -- I shouldn't say leaking. I
3 should say seeping into the ECCS rooms, condensate
4 pump, pit rooms, anything low down in the bowels of
5 the plant.

6 A lot of cables run along the walls. I
7 guess in your inspection, which included, I guess, a
8 physical look at the plant --

9 MS. KOZAK: Yes, that's correct.

10 CHAIRMAN LEITCH: -- did you notice any
11 material condition issues on those cables with respect
12 to those? It's not a gusher of water. It's almost
13 like a stalactite that drips down.

14 MS. KOZAK: Groundwater in-leakage. We
15 did specifically on our walkdowns take a look at
16 that, and I can tell you from past resident inspector
17 experience, it's something that is always looked at.
18 Is this just a cosmetic thing or is this something
19 that has a potential to affect safety equipment.

20 CHAIRMAN LEITCH: Yes, that's exactly my
21 concern.

22 MS. KOZAK: Right. We did not during our
23 walkdowns for this inspection find any issues that
24 would be affecting equipment. It was all cosmetic.

25 CHAIRMAN LEITCH: Okay. Do you think that

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1 it will stay cosmetic for 30 more years?

2 MS. KOZAK: That's a good question.

3 DR. ROSEN: If you answer that question,
4 let me have your crystal ball.

5 CHAIRMAN LEITCH: I guess it's an
6 unanswerable question. It's not a fair question, no.

7 I know that Quad Cities is well aware of
8 the problem as well, and has tried to fix it, but
9 without a whole lot of success.

10 MS. KOZAK: Right. Periodically over
11 time, you know, it gets worse, and then it gets
12 cleaned up. Then it starts to degrade, and then it
13 gets cleaned up again. So I think that's kind of how
14 it is approached.

15 CHAIRMAN LEITCH: There are cable trays
16 supported off the walls. You know, if it was allowed
17 to proceed without some housekeeping and careful
18 attention, I would be concerned that there could be a
19 buildup of this gorp onto some of those cables and
20 cable trays or perhaps the attachments of the cable
21 trays to the walls.

22 MR. BOHLKE: If I could interject, the
23 structural monitoring program has that as an attribute
24 for inspection.

25 CHAIRMAN LEITCH: It does?

1 MR. BOHLKE: The other thing, in response
2 to that, making it sound like the river is flooding
3 the building or whatever, about 2000 we put forward
4 quite a substantial effort, and you probably were on
5 site when we did that, Laura, to go in and redo the
6 cut drain channels to the condensate pump room floor
7 so we could take water away through a drainage system,
8 take away the standing water which was just a real
9 housekeeping issue.

10 Since then, we have these additions where
11 the water table -- We don't at this time see any
12 permanent effects, but we'll keep our eye on it. As
13 I said, it is looking at things like the connections
14 of the cable tray to the wall.

15 CHAIRMAN LEITCH: Good. thanks, Bill.
16 That helps. Thank you.

17 MS. KOZAK: Good. Well, that is all the
18 slides on the inspections. The rest of the slides are
19 on the current ROP performance. So unless anybody has
20 any other questions on the inspections right now, then
21 I can talk about the ROP performance.

22 CHAIRMAN LEITCH: I did hear you say that
23 there is still one day more of inspection in May or
24 something like that?

25 MS. KOZAK: That's right, in May there is

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1 an inspection to follow up on the accuracy of the
2 action tracking items for the implementing activities.

3 CHAIRMAN LEITCH: Thank you.

4 MS. KOZAK: If you would want to just go
5 to Dresden 3 slide for the ROP performance, Dresden 2,
6 Quad Cities 1 and Quad Cities 2 are all in the
7 licensee response column of the action matrix. Our
8 slides here only show the performance indicators, but
9 I can tell you that the inspection findings also are
10 green for those facilities.

11 Dresden 3, which is up now, is in the
12 regulatory response column of the action matrix, based
13 on the White Performance Indicator for the high
14 pressure injection system unavailability. That was
15 previously discussed.

16 There was also a parallel inspection
17 finding that was also White associated with that
18 issue. In the ROP, though, if it is the same event or
19 underlying cause, it doesn't get double counted.

20 DR. WALLIS: Just to be clear on this.
21 This was an event where -- It was not available. So
22 they got a bad mark, and this stays with them, even
23 though they fixed it, for a certain period of time.

24 MS. KOZAK: That's true.

25 DR. WALLIS: Because they are waiting it

1 out is all.

2 MS. KOZAK: That's true.

3 DR. WALLIS: This doesn't mean that they
4 are in any way defaulting or anything.

5 DR. ROSEN: It's three years.

6 DR. WALLIS: Just waiting it out is all
7 that's happening.

8 MS. KOZAK: Right.

9 MR. BARTON: What is the gray box? I
10 didn't know we had gray.

11 MS. KOZAK: Gray is not applicable. Just
12 to follow on with that White PI and White inspection
13 finding, per the ROP the Region conducts the
14 supplemental inspection associated with the issue, and
15 that inspection was conducted in November 2003, and we
16 did find that Exelon had done an appropriate root
17 cause and taken corrective actions. So that finding
18 is then closed, and there is no further follow-up
19 inspection plan beyond the baseline inspection
20 program.

21 That was all the remarks that I had today.

22 CHAIRMAN LEITCH: Thanks, Laura.

23 MR. KIM: All right, I am on Slide Number
24 25, and we are moving into Section 3 of the
25 application, which is aging management review and

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1 aging management programs.

2 Again, as I mentioned earlier, Dresden and
3 Quad Cities' application follow the format of GALL
4 report, and as such, the Section 3 is divided into six
5 subsections for different group of systems. I'm not
6 going to go through each one of these.

7 Let's go to Slide 26. This slide is a
8 highlight of aging management programs. As it was
9 mentioned earlier during the first presentation by
10 Exelon, there are a total of 47 aging management
11 programs that are credited for license renewal.
12 Eighteen of those are considered common aging
13 management programs, meaning it applies to multiple --
14 one or more systems, and 29 system or structure-
15 specific aging management programs.

16 Eighteen of the 47 are considered
17 consistent with GALL, and some of them with
18 enhancements, and 20 aging management programs are
19 considered consistent with certain exceptions. I
20 think we talked about those before. Nine aging
21 management programs are site specific in that they are
22 all aging management programs.

23 As I mentioned earlier, through the
24 staff's review process the applicant added four
25 additional aging management programs, and in this area

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1 the staff has one open item and five confirmatory
2 items, all of which have been resolved at this point.

3 MR. BARTON: T.J., I have a question. In
4 this section, talking about aging management of
5 compressed air systems, there is discretion in the SER
6 about the Dresden instrument air system that had some
7 experience with corrosion and debris or whatever and
8 in valves and valve operators, positioners, and then
9 piping.

10 You talk about a program of periodically
11 providing slowdown, which should say blowdown, I
12 think. I never heard of a slowdown program. I'm not
13 trying to be funny there. You talk about slowdown
14 twice in that section, and it's confusing, but they
15 talk about a blowdown, propose a blowdown program for
16 instrument air piping. All right, and it says it has
17 been initiated.

18 Now what are the results of this program,
19 and what does the applicant propose to do if the
20 program does not solve the problem. Thirdly, how is
21 it that moisture has been introduced to where you've
22 got corrosion, debris products in a system that is
23 designed to provide clean, dry air?

24 MR. KIM: Okay. I'm going to ask Jim
25 Strnisha to address that question.

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1 MR. STRNISHA: Can you repeat that,
2 please? I'm sorry.

3 MR. BARTON: Which part? All three parts?

4 MR. STRNISHA: Yes.

5 MR. BARTON: Okay. You talk in the SER,
6 apparently Dresden has got a problem with some -- in
7 the instrument air or some portion of the instrument
8 air system. They got debris, corrosion products or
9 whatever. So they propose to do a periodic blowdown
10 program. I guess the debris, and you keep blowing it
11 down.

12 My question is, you know, what is the
13 results of this? Has this solved the problem, and if
14 it hasn't, what has been proposed long term if that
15 does not correct the problem, and thirdly, is there a
16 design issue here or something with this system?

17 It's supposed to be instrument air.
18 Instrument air system has dryers, etcetera, that's
19 supposed to provide clean, dry air for instrumentation
20 of valves and valve operator's positioner so the stuff
21 works. Apparently, there's a problem here.

22 So I'm asking you, you know, what are they
23 doing? Is it successful? What are they going to do
24 if it's not successful, and what's the initiator of
25 this problem? It's not supposed to be like this in

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1 the instrument air system. That's my question.

2 MR. STRNISHA: Okay. I don't think I can
3 answer that one. T.J., I didn't review the auxiliary
4 systems. I reviewed one-time inspections, and I don't
5 remember looking over that issue.

6 MR. KIM: Okay. Can anyone from the tech
7 staff address that question?

8 MR. KUO: Well, T.J., let's move on.
9 We'll get back.

10 MR. KIM: Yes, we'll get back to you on
11 that question.

12 DR. FORD: I have a question about the
13 water chemistry program. I think this is the right
14 time to ask the question.

15 As I understand it, on page 312, the
16 Revision 2 of the EPRI BWR water chemistry guidelines,
17 has been approved by the staff. That's correct?

18 MR. KIM: Right.

19 DR. FORD: That was based on the fact that
20 Peach Bottom used it in their application.

21 MR. KIM: Right.

22 DR. FORD: Now I notice that the applicant
23 here have not used some of the less demanding aspects
24 that were in Rev. 1, especially when you are using
25 noble chem and hydrogen water chemistry, and that's

1 good that they are not using it, quite honestly;
2 because some of the relaxation on the chloride and
3 sulfate monitoring and ECP monitoring, I think, is
4 maybe too relaxing, if you like.

5 MR. KIM: You're talking about from Rev.
6 1 to Rev. 2?

7 DR. FORD: That is correct. has anyone on
8 the staff ever looked at the risk associated with, for
9 instance, measuring ECP under hydrogen water chemistry
10 and noble chem conditions? Has anyone asked the
11 question what if, for instance, they don't keep
12 hydrogen on all the time?

13 MR. KIM: I am going to ask the tech staff
14 to address this specific question, but generally
15 speaking, I know the staff has compared what is
16 required under EPRI chemistry guideline Rev. 1 versus
17 Rev. 2, item by item, and we have addressed all the
18 relaxations. That is my big picture understanding of
19 what the staff reviewed.

20 DR. FORD: My reservation does not apply
21 to this particular applicant, because in fact they
22 don't take advantage of those relaxations.

23 MR. KIM: Right. But your specific
24 question about relaxing the requirements --

25 DR. FORD: Yes. Has anyone on the staff -

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1 - that they are willing to accept the Rev. 2
2 applications. Yes. Has anyone done the risk analysis
3 associated with having those relaxations apply for any
4 station in the future?

5 You have created a precedent. So when the
6 next station comes in that can use the Rev. 2 Water
7 Chemistry Guidelines, and they may not be as
8 responsible, if you like, as this current applicant.

9 MR. KIM: We will have to follow up on
10 that. Barry?

11 MR. ELLIOTT: Let me just say this, that
12 the EPRI Water Chemistry Guidelines are continuously
13 updated based upon experience. I forgot -- When we
14 originally put out GALL -- I don't know what Rev. they
15 were up to, but I'm sure they are well past that Rev.
16 now. And we review the differences between the two,
17 between what we originally approved and what the new
18 guidance is.

19 We don't look at any risk in that. We
20 just look at what those differences are, and then we
21 make a judgment about whether or not they are
22 acceptable, the revision to the EPRI guidelines are
23 acceptable for license renewal. That is our approach,
24 and mostly it is based upon experience that the plants
25 are operating, and they go out and they look and see

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1 that certain changes are necessary to maintain water
2 chemistry, for hydrogen water chemistry, for instance,
3 or noble metal chemistry, some kind of adjustments in
4 the guidelines.

5 So that's how we do this, our reviews, and
6 I think that is explained in our SER.

7 DR. FORD; I think we will come back to
8 this, because Dresden 2 --

9 MR. BOHLKE: Would you mind if I just
10 correct something? You may have inadvertently given
11 the impression that we don't have reliable a hydrogen
12 chemistry system, and we do. That's an important
13 attribute to us.

14 DR. FORD: I'm just going back to the
15 early history of hydrogen water chemistry, which is
16 applied at Dresden where you did not have hydrogen
17 monitoring, and you were above the 2-230. I'm just
18 referring to that historical time, which is
19 undoubtedly the reason why you do measure ECPs now.
20 My guess. Anyway, I'll come back to that.

21 MR. KIM: I would just like to add, that
22 is probably one of those areas where the GALL update
23 will probably capture the difference between EPRI
24 Guideline version Rev. 2 versus Rev. 3.

25 DR. FORD: I keep asking this question.

1 When is GALL going to be upgraded?

2 MR. KIM: I think it is scheduled for
3 Fiscal Year -- end of Fiscal Year '05 is when.

4 All right. I am on Slide Number 27. As
5 I mentioned earlier, the NRR staff augmented by
6 contractors -- we have performed a two-day audit of
7 the aging management programs at the Exelon's
8 engineering facility at Cantera.

9 The purpose of the audit was to really
10 compare their aging management program basis documents
11 against the corresponding GALL aging management
12 programs, one by one, element by element -- keep in
13 mind there are 10 elements to each program in GALL --
14 to make sure they are consistent, as the applicant has
15 stated in their application.

16 Based on the audit, we have concluded
17 that, for the most part, the applicant's aging
18 management programs are consistent with GALL. We did
19 find three exceptions, and the exceptions included in
20 aging management programs for selected leaching, fire
21 protection program, and one-time inspection program.

22 We will go into that in detail a little
23 bit later.

24 Let's move on to Slide Number 28. Section
25 3.1 of the application addresses aging management

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1 review and aging management programs for reactor
2 vessel, internals and RCS. There were five
3 confirmatory items in that section, four of which are
4 resolved, and one still being reviewed by the
5 technical staff as we speak.

6 Section 3.2 addresses engineer safety
7 features systems, and there are no open or
8 confirmatory items.

9 CHAIRMAN LEITCH: Concerning the reactor
10 vessel, there is a relief that has been granted for
11 circumferential welds. Evidently, the theory is that
12 axial welds would fail much more likely than
13 circumferential welds.

14 So basically, we are saying let's just
15 look at the axial welds. But then Dresden -- I think
16 it's Dresden -- you can't look at all the axial welds.
17 I mean, I think the relief from circumferential welds
18 was based on the fact that you were going to do 100
19 percent inspection of the axial welds, and infer from
20 that, if they were okay, then the circumferential
21 welds would be okay. But at Dresden you can't look at
22 100 percent of the circumferential welds.

23 MR. KIM: You mean the axial welds.

24 CHAIRMAN LEITCH: The axial welds, excuse
25 me. So I was wondering, you know, what is the basis

1 for that being okay?

2 MR. ELLIOT: Barry Elliot again. You are
3 asking about the basis for why we allow --

4 CHAIRMAN LEITCH: Less than 100 percent.

5 MR. ELLIOT: Less than 100 percent. The
6 criteria is 90 percent. It's in the rule.

7 CHAIRMAN LEITCH: I think this is less
8 than 90 percent.

9 MR. ELLIOT: This is probably less than
10 90. We look at the overall -- have to look at --
11 Every ten years the application -- This is a Part 50
12 question, really. What we do is every ten years
13 licensees put in requests for relief from inspection,
14 and that would be -- Whatever interval they are in
15 now, they would have asked relief from inspecting the
16 axial welds, and most likely the reason they can is
17 because you can't get access to all of the axial
18 welds.

19 CHAIRMAN LEITCH: Schedule restrictions,
20 yes.

21 MR. ELLIOT: The jet pumps are in the way,
22 and a whole bunch of other things are on the inside
23 that you just can't get there. So this is a best
24 effort, and the BWR owners group is developing tooling
25 to make -- to better -- to get more access to these

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1 welds. At the moment at lot of these welds, there
2 just isn't access to them, and that's our basic
3 philosophy -- not philosophy, but that's one of the
4 reasons we give relief.

5 The second one is that we haven't -- These
6 welds are not so unique. I mean, they are all -- I
7 forgot who made these plants, but it was made by only
8 a couple of vendors that make all the reactor vessels,
9 and the -- In fact, I think B&W did these vessels.

10 So the vessels are -- Even though they are
11 BWRs, the vessel weld materials are in PWRs, too, and
12 so that we have a pretty good feel that there aren't
13 flaws being made of any significant amount during
14 fabrication.

15 The question is during operation, are
16 there any flaws that could be operational occurring?
17 We just haven't seen any of those. So we've been very
18 flexible in giving relief to the problem of that they
19 just don't have access.

20 CHAIRMAN LEITCH: Now does that also apply
21 to Quad Cities or can they look at greater than 90
22 percent at Quad?

23 MR. ELLIOT: I don't have the relief
24 request here, but I'm sure -- We have this general
25 problem with BWRs, because of the access problem. We

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1 don't have the similar problem with PWRs. They have
2 more access, and so PWRs have this problem. I don't
3 know specifically how much percentage Quad Cities and
4 Dresden gets. We could look that up if you want and
5 all that, but I'm just telling you this is the way we
6 handle it.

7 We handle it as a Part 50 question, every
8 ten years, based on the access, based upon the tooling
9 capability, and the BWR owners group knows that this
10 is a problem, and people are developing tooling to get
11 in behind the jet pumps into different areas that we
12 didn't have in the past. Hopefully, we will be
13 getting as the plants age better tooling to get more -
14 - a higher percentage of the welds looked at.

15 CHAIRMAN LEITCH: Okay, thanks, Barry.

16 MR. KIM: Okay. The next slide is on
17 Section 3.3 and 3.4 which addresses auxiliary systems
18 and steam and power conversion systems.

19 There is one open item and two
20 confirmatory items in these two areas. If we move on
21 to the next slide, the one open item -- The open item
22 deals with the one-time inspection. Let me just
23 briefly talk about what the nature of the open item
24 is.

25 The one-time inspection -- The GALL

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1 recommends one-time inspection is to be credited or
2 performed to either verify effectiveness of other
3 aging management programs, water chemistry program,
4 for example, or to verify your assumption that aging
5 is not occurring in a given component or system.

6 In its application, Exelon takes credit
7 for a lot of -- a one-time inspection for a lot of
8 systems and components, and the staff has, through RAI
9 process, challenged that.

10 As a result, Exelon has developed or
11 changed their position, if you will, on two of the
12 one-time inspections to make those into a periodic
13 inspection, and one example of that is a plant heating
14 system where Exelon has now changed one-time
15 inspection to a periodic inspection.

16 The staff has also challenged Exelon on
17 various different combinations of environment and
18 aging effects where they take credit for one-time
19 inspection. As a result of that, they have expanded
20 the scope quite significantly for one-time inspection.

21 By the way, this open item on one-time
22 inspection has been resolved by the staff. We are in
23 the process of revising our SER to reflect that.

24 Moving on to Slide Number 32. This slide
25 addresses Section 3.5 of the application, which is

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1 structures, containment and other structures. There
2 is one open item in this area.

3 Basically, the open item comes down to the
4 applicant -- The question was whether the applicant
5 should take credit for structures monitoring program
6 to inspect the MC supports, metal containment
7 supports.

8 Where GALL recommends following the code
9 requirements IWF, Exelon has taken an exception -- a
10 partial exception to that. Exelon has suggested that
11 they are going to follow IWF requirements for all of
12 the MC components except the pipes that penetrate the
13 containment, which they consider as part of the MC
14 components. So that area is still being looked at by
15 our technical staff.

16 DR. ROSEN: What is the substance of it?
17 I understand they are taking exception, but why?

18 MR. KIM: Why?

19 DR. ROSEN: Why are they taking exception
20 to the GALL here? I don't understand. This is the
21 kind of thing that sort of puzzled me when I looked at
22 this application, this and the one on upper shelf
23 energy. Why are these things even showing up here?
24 I don't understand the substance of this exception.

25 MR. MA: My name is John Ma. I am from

1 Division of Engineering.

2 This issue is because the current
3 licensing basis for those they call processing piping,
4 which are the piping penetrate through containment.
5 They classify them as MC piping, and therefore, those
6 supports attached to those piping they call MC piping
7 supports.

8 Now this plant is pre-ASME plant.
9 Therefore, at the time frame they classified them as
10 MC piping supports there was no ASME code. So their
11 current licensing position is MC piping and MC piping
12 supports. Therefore, they have not done any
13 inspection on those, but they said they did try to use
14 a structural monitoring program to inspect those
15 supports.

16 So they are trying to carry that program
17 into licensing renewal period. That's the reason.

18 DR. ROSEN: Okay. So it is a pre-ASME
19 Section 11 program that Exelon is comfortable with and
20 familiar with, and just wants to -- and they are
21 asserting is adequate to assure the integrity of these
22 supports, and they want to carry that on into license
23 renewal period. Okay.

24 MR. KIM: Where the staff is right now is
25 that we are comparing their structures monitoring

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1 program to IWF requirements and trying to compare the
2 substance to see how comparable --

3 DR. ROSEN: Well, what happens if you do
4 that, which you said you will, and you find something
5 in IWF that you think is valuable? Does that then
6 become something that you negotiate with Exelon?

7 MR. KIM: That's right. I'll give you an
8 example. Sample size is an issue that we continue to
9 dialogue with Exelon.

10 DR. ROSEN; Okay. So if it hadn't been
11 for license renewal, they would never have to change
12 this, because their license right now allows them to
13 do it the way they are doing it.

14 MR. KIM: That's right. That's correct.

15 DR. ROSEN: Because they are not an ASME
16 Section 11 plant.

17 MR. KIM: That's correct.

18 DR. ROSEN: But because it's license
19 renewal, you get another chance to get up to the
20 plate, and they've got to pitch again.

21 MR. KIM: If you want to put it that way,
22 yes.

23 DR. SIEBER: So you are changing their
24 current licensing basis?

25 MR. KIM: No.

1 DR. SIEBER: It's not a bad fit?

2 MR. KIM: It's not, because -- We believe
3 it's not, because we are going beyond the current
4 licensing term now. We are looking at beyond the
5 first four years.

6 DR. ROSEN: Has the applicant claimed it's
7 consistent with GALL?

8 MR. KIM: I'm sorry?

9 DR. ROSEN: Has the applicant claimed it's
10 consistent with GALL with respect to this?

11 MR. KIM: I believe they said it's
12 consistent with GALL with the exception of the process
13 piping that they are characterizing as --

14 DR. ROSEN: And so it's not consistent
15 with GALL. It's excepted, different.

16 MR. KIM: Right.

17 DR. ROSEN: For these things.

18 MR. KIM: Right.

19 MR. KUO: See, for license renewal review,
20 we don't necessarily take the current existing program
21 as it is. That's the whole basis of a license
22 renewal. The license renewal rule says we carry the
23 current licensing basis into the renewal period, with
24 the exception of aging management.

25 So our review is to review whether the

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1 aging effects is properly managed by this program. If
2 we don't think this current program is sufficient, in
3 our view, to manage the aging effect, then we will
4 have to talk with them about it.

5 DR. ROSEN: So you'll report on this at
6 the next meeting?

7 MR. KIM: Yes, sir, we will.

8 Okay, our next slide provides a quick
9 overview of groundwater -- below grade water chemistry
10 parameters, and as you can tell, both Dresden and Quad
11 Cities are in a very mild, nonaggressive environment.

12 Moving on to Slide Number 35, Section 3.6
13 addresses electrical and -- aging management review
14 and aging management programs for electrical and I and
15 C components. As I said before, the applicant used a
16 spaces approach to group the components into three
17 commodity groups.

18 There are four aging management programs
19 associated with these commodity groups, and the staff
20 has reviewed them and have no open or confirmatory
21 items in this area.

22 In summary for the aging management review
23 and aging management programs, other than the open
24 item that we just talked about, the staff has found
25 that their aging management programs are consistent

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1 with GALL. In cases where there were exceptions,
2 staff has reviewed each individual exception
3 specifically, and have found them acceptable.

4 We have concluded that their aging
5 management programs are acceptable.

6 CHAIRMAN LEITCH: I just had one question
7 about the accuracy of the SER. It's not really an
8 aging management issue, but page 2-80 refers to the
9 Quad Cities RHR system, and it talks about LPCI/LOOP
10 selection logic.

11 I was just wondering, has the LPCI/LOOP
12 selection logic been removed at Quad Cities? It was
13 removed at most plants. I don't know about Quad
14 Cities.

15 MR. KIM: I'm not even sure why something
16 like that would be in the license renewal SER.

17 CHAIRMAN LEITCH: Page 2-80.

18 MR. KIM: Graham, the answer is it's not
19 removed.

20 CHAIRMAN LEITCH: It's not removed? Okay,
21 then my only concern was just the accuracy of the
22 document. So it is accurate then. LPCI/LOOP
23 selection logic is still in place. Fine.

24 So at the interest of totally blowing the
25 schedule, I know we look forward with great

1 anticipation to Section 4 on the TLAAs and Kimberley's
2 presentation. I would propose a quick ten-minute
3 break, so we'll come back nice and fresh for that
4 exciting presentation, actually nine minutes, ten to
5 five.

6 (Whereupon, the foregoing matter went off
7 the record at 4:35 p.m. and went back on the record at
8 4:46 p.m.)

9 CHAIRMAN LEITCH: Kimberley is going to
10 take us through Section 4, the time limiting aging
11 analysis. Right, Kim?

12 MS. CORP: That's right. Section 4 is the
13 time limited aging analysis. Dresden and Quad Cities
14 addressed all of the six generic TLAAs that were
15 specified in GALL, as well as some plant specific
16 TLAAs.

17 Section 4.2 dealt with the reactor vessel,
18 internals, neutron embrittlement. There were seven
19 analyses affected by irradiation embrittlement: The
20 reactor vessel upper shelf energy, pressure-
21 temperature limits, as well as five other neutron
22 embrittlement related TLAAs.

23 For this section, we had one open item,
24 currently under staff review which I will talk about
25 in the next slide, and four confirmatory items that

1 have been resolved by the staff.

2 For the reactor vessel upper shelf energy
3 calculations, the staff calculated for Dresden for the
4 limiting beltline plate material for both units was
5 about 50 foot-pounds, as well as for Quad Cities Units
6 1 and 2.

7 For the limiting weld, the screening
8 criteria used by the staff was greater than or equal
9 to 35 foot-pounds from the EPRI topical report which
10 demonstrates that welds with upper shelf energy values
11 of 35 foot-pounds can have margins of safety against
12 fracture equivalent to those required by Appendix G,
13 Section XI of the ASME Code. Therefore, they are
14 acceptable.

15 So Dresden Units 2 and 3 were both above
16 35. Now Quad Cities Unit 2 is projected at 34 foot-
17 pounds, and this is currently the one open item.

18 DR. WALLIS: This is at the end of the
19 license or something?

20 MS. CORP: Right, the end of the projected
21 licensing period.

22 DR. ROSEN: What is different about that
23 weld?

24 MS. CORP: John Honcharik of the staff --
25 this was his topic.

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1 DR. WALLIS: It almost looks as though the
2 staff made a mistake.

3 MR. HONCHARIK: My name is John Honcharik.
4 I guess the reason why it is 34 is based on one of
5 their surveillance data, and that surveillance data
6 made it extremely low. So when they did the
7 calculations to that topical report, it was below the
8 screen criteria of 35 foot-pounds.

9 DR. ROSEN: It's one capsule.

10 MR. HONCHARIK: Yes.

11 DR. ROSEN: Somebody said that earlier.

12 MR. HONCHARIK: Right.

13 DR. ROSEN: What was it about that capsule
14 that -- Is there any theory there? What am I supposed
15 to believe, that capsule or something else?

16 MR. HONCHARIK: Well, I think there were
17 a total of three. This was the electroslog weld for
18 Quad 2. I think there were three capsules. This one
19 was the lowest one. So in order to take a
20 conservative approach, we asked them to do an plant
21 specific equivalent margin.

22 DR. ROSEN: Well, let's talk about the
23 capsule. You got three capsules, and you take the
24 lowest one. Do you do that all the time?

25 MR. HONCHARIK: Yes.

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1 DR. ROSEN: So like, for instance, the
2 Unit 2 at Dresden, there's three capsules there. You
3 take the lowest one, and you calculate your limiting
4 weld.

5 MR. HONCHARIK: Right.

6 DR. ROSEN: Upper shelf energy, and you
7 get 49 foot-pounds. Right? And that's the same
8 process you use for all of them. But when you do that
9 for Quad Unit 2, you get 34, but the other two -- what
10 would you get if you did the same calculation with
11 either or both of the other two?

12 MR. HONCHARIK: I believe the other two
13 would have been higher than 35 foot-pounds.

14 DR. ROSEN: I should hope so. What would
15 you get? Would you get 49? Would you get something
16 comparable to the numbers that you see at the other
17 Quad unit and Unit 2 and 3 at Dresden?

18 MR. HONCHARIK: No. It was higher than
19 the 35. It was, I guess, more comparable to the other
20 units.

21 DR. ROSEN: Well, this is one of the
22 crucial issues. Is the reactor vessel really fit for
23 service for 60 years? So what I'd like to see is the
24 data for all of them, all the capsules, and the
25 calculation for each of them separately. Is that

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1 something you can do, assuming you've done it.

2 MR. HONCHARIK: Yes. You're talking about
3 the margin analysis?

4 DR. SHACK: No, I think he just wants the
5 Charpy data for the other specimens.

6 MR. HONCHARIK: Okay. I believe that
7 should be in the application, too.

8 DR. ROSEN: Okay, if you could show that.

9 MR. HONCHARIK: All right.

10 DR. WALLIS: That's the other question:
11 What do they show? This is the staff calculated
12 value? What did the applicant submit?

13 MR. KIM: Mr. Kluge from Exelon?

14 MR. KLUGE: Yes. This is Mark Kluge from
15 Exelon. To go back to the previous question, if you
16 looked at the other three capsules, there are actually
17 four that have been analyzed from Quad Cities, and
18 used only the results of those capsules, you would get
19 a final end of life upper shelf energy of about 46
20 foot-pounds.

21 So the one capsule that is limiting is an
22 outlier as far as not only Quad Cities Unit 2 and not
23 only the Exelon plants. It is an outlier for
24 electrosag weld data throughout the BWR fleet that
25 has such welds.

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1 DR. ROSEN: Any theory why you got what
2 you got there?

3 MR. KLUGE: Well, as I'm sure you know,
4 when you do an upper shelf energy with the Charpy
5 testing, if you have a limited number of data points,
6 one data point that could be bad for whatever reason -
7 - if that specimen had a flaw in it that wasn't
8 detected -- that can skew the data badly.

9 The only theory we can presume here is
10 that we have such a data point. The upper shelf for
11 this particular capsule was determined with just two
12 data points.

13 DR. FORD: So what would the resolution of
14 this problem be then?

15 MR. KLUGE: Well, the resolution that we
16 presented to the staff, and the previous slide, I
17 believe, said we were still preparing the analysis --
18 It has not been submitted. The resolution is that we
19 took that limiting data and took 34 foot-pounds that
20 you would calculate with the limiting results, and
21 then did an equivalent margin analysis showing that,
22 for the transients either specific to Quad Cities or
23 bounding Quad Cities and the material in the Quad
24 Cities vessel, that 34 foot-pounds would give you an
25 adequate result. That is, a flaw would not propagate

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1 throughwall, if you had a limiting transient.

2 DR. ROSEN: And that's acceptable?

3 MR. KLUGE: Yes.

4 DR. ROSEN: That's what you do when you
5 don't meet the screening criteria, which is what those
6 are.

7 MR. KLUGE: Yes. The screening criteria
8 from the VIP were meant to give all the BWRs this
9 cookbook method to show that you were adequate
10 quickly. It just turns out, when you use that
11 specific Quad Cities capsule, we didn't pass.

12 DR. ROSEN: So you did the equivalent
13 margins analysis, and you are fine.

14 MR. KLUGE: That's correct.

15 DR. ROSEN: Well, and probably what you
16 need to do is to -- Well, the staff can decide. You
17 will have to come back to this.

18 MR. KUO: We will have to come back on
19 this.

20 DR. ROSEN: And tell us that you have
21 accepted the equivalent margins analysis in the case
22 of Quad 2.

23 MR. KUO: That's right, and we might even
24 present the data to you.

25 DR. SIEBER: I presume the specimen after

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1 the Charpy test has been disposed of.

2 MR. KLUGE: That specific test was done in
3 1981. So --

4 DR. SIEBER: That's right. It has been
5 disposed of.

6 MR. KLUGE: If it hasn't been disposed of,
7 I'm sure it is not readily retrieved.

8 DR. SIEBER: Okay, because you could look
9 for a flaw.

10 DR. ROSEN: That's not necessary. All I'm
11 saying is --

12 DR. SIEBER: Well, it's not. It's easier
13 to do it the other way.

14 DR. ROSEN: Well, they've done what is
15 required. It's just the staff has to report it and
16 make a specific finding with respect to it.

17 MR. KIM: That's correct, and we will
18 follow up on that.

19 MR. HONCHARIK; Right, and I'd like to
20 make a point, that the data for Quad 2 was gathered
21 through RAIs that we had with the applicant. That was
22 not part of the original submittal. It was based on
23 RAI responses.

24 MR. KUO: John, that's okay. We will get
25 back to Dr. Rosen.

1 DR. ROSEN: Well, not just me. I mean,
2 the whole Committee.

3 MR. KUO: Yes, the whole committee. Yes.

4 DR. ROSEN: This is something that you
5 will have to talk about when you come back.

6 MR. KUO: Since you asked the question, I
7 just mentioned your name.

8 MS. CORP: Okay. For pressure/temperature
9 curves, Section 4.2.5 of the LRA states that the P-T
10 curves will be available prior to the period of
11 extended operation and that the updated limits must be
12 in the P-T limit report or in the technical
13 specifications prior to the period of extended
14 operation.

15 This is being tracked by Commitment Number
16 47 in Appendix A of the SER.

17 CHAIRMAN LEITCH: The SER -- This may not
18 be exactly the right place to bring this up, but the
19 SER on page 2-48 has a discussion of Dresden Number 2
20 jet pump riser braces. It sounds like, of the four,
21 these are an outlier and may have to be replaced, and
22 I guess this situation is going to be evaluated prior
23 to entering the period of extended operation?

24 MR. KIM: That is correct.

25 CHAIRMAN LEITCH: But it seems as though

1 this is a vibration issue perhaps rather than an aging
2 issue. I'm not sure whether this is flow dependent or
3 time dependent. I'm just wondering whether the
4 consideration here should be looked at based on the
5 extended power uprate versus looked at prior to
6 entering the period of extended operation.

7 MR. POLASKI: Graham, the designs of the
8 jet pump riser brace on Unit 2 are unique, and they
9 are not replicated for Unit 3 or Quad Cities Units 1
10 and 2. In fact, in the last Dresden 2 outage, we went
11 in and put one repair clamp, I believe, to the one
12 brace that was actually cracked, and we put mitigating
13 clamps on the rest of the braces for that jet pump
14 scheme with 20 jet pumps to preclude any adverse
15 effects from vibration at any flows that we expected
16 to see.

17 So we think we have taken this guy out of
18 play, substantially taken out of play with a backfit.

19 CHAIRMAN LEITCH: So you preemptively put
20 these clamps on all the jet pumps?

21 MR. POLASKI: We fixed the one that was
22 broken, and we put mitigating clamps on the ones that
23 weren't so that they wouldn't be in the frequency
24 range of interest.

25 CHAIRMAN LEITCH: Okay, thank you.

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1 DR. ROSEN: Can you explain, Kimberley,
2 this confirmatory item on reactor vessel axial weld
3 failure probability? I have read that thing three
4 times, and I still don't get it.

5 MS. CORP: The actual commitment in the
6 table?

7 DR. ROSEN: What is the issue here? It
8 brings in Clinton and the axial welds from Clinton as
9 a comparison. I'm totally confused by that.

10 MS. CORP: I think Barry Elliot will
11 address that.

12 MR. ELLIOT: The axial welds -- This came
13 out of the circumferential weld evaluation. When we
14 originally did -- When G.E. did the original
15 circumferential weld proposal to eliminate the
16 circumferential welds, they compared the probability
17 of vessel failure for the circumferential welds to the
18 axial welds, and the circumferential welds were very
19 low probability of failure. So we could eliminate
20 their inspection.

21 When they did the evaluation, they also
22 looked at the axial welds, and they had a high
23 probability of failure in the original analysis --
24 very high, much higher than we would have liked.

25 So we asked them to go back and sharpen

1 their pencils and do a revised analysis, so that they
2 could show that the axial welds would have a low
3 probability of failure.

4 What they did, they looked at the fleet,
5 and they determined which was the limiting axial welds
6 in the entire fleet, and I think it was Clinton and
7 some other plant. I forgot which one it was, but it's
8 in the SER.

9 They only did the evaluation. So what
10 they determined was, for a certain route of
11 embrittlement, certain adjusted reference temperature,
12 that as long as the embrittlement stayed below that
13 adjusted reference temperature, the axial welds would
14 have a low probability of failure.

15 So what we've said in the SER was all
16 plant shave to demonstrate that their embrittlements
17 are below that criteria, so that we are assured that
18 the axial welds have a low probability of failure. So
19 everybody has to go look at their fluents, their
20 copper, and based upon uprate, based upon license
21 renewal, and determine that their adjusted reference
22 temperatures are below the value in our SER, which is
23 based upon the limiting plants at the time we did the
24 evaluation.

25 DR. ROSEN: That's very helpful. Now stay

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1 with me here, Barry. The Clinton welds, Clinton axial
2 welds, the NDT value is 91 degrees C. It's fairly
3 high.

4 MR. ELLIOT: What's that?

5 DR. ROSEN: Ninety-one at Clinton.

6 MR. ELLIOT: Yes, that's fairly high.

7 DR. ROSEN: Yes. So if you are lower than
8 that, you are okay?

9 MR. ELLIOT: That's right.

10 DR. ROSEN: So what this says is Dresden
11 and Quad Cities have RTNDT values of 19 degrees C,
12 which is way below 91. So that looks like it is going
13 to be okay.

14 MR. ELLIOT: Yes.

15 DR. ROSEN: Then the confirmatory item is
16 the applicant should confirm that Quad Cities 1 and 2
17 have a mean value of 19 degrees C for RTNDT and
18 address this TLAA of the axial welds for Quad Cities
19 in the USFAR Supplement.

20 So what is it you are asking for here?

21 MR. ELLIOT: What happened was -- This was
22 our discussion about whether they had to do this for
23 both Dresden and Quad Cities. They only wanted to do
24 it, I think, for Dresden. They didn't want to do it
25 for Quad Cities, and we said you have to do it for

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1 both units, both plants.

2 So they have to do it, and they have to do
3 the same evaluation they did -- I guess they did it
4 for Dresden there. They got to do the same thing for
5 Quad Cities, and they got to confirm it. I mean,
6 that's what I get out of that write-up. I don't
7 remember, but that sounds like what it was.

8 DR. ROSEN: Okay. So that's what is open.
9 That confirmatory item remains open, I gather. Is
10 that right?

11 MR. ELLIOT: That's a confirmatory item,
12 because we pretty much know that they are going to be
13 okay, but they are the ones that are supposed to do
14 this evaluation, not us.

15 MR. HONCHARIK: Right. This is John
16 Honcharik. They have submitted a response to that
17 confirmatory item.

18 DR. ROSEN: They have already?

19 MR. HONCHARIK: Yes.

20 DR. ROSEN: So they've done it?

21 MR. HONCHARIK: Yes, and we found that it
22 acceptable.

23 DR. ROSEN: Okay. It's just not reported
24 here.

25 MR. HONCHARIK: Right.

1 MR. KIM: Keep in mind, though, this was
2 back in February.

3 MR. HONCHARIK: This is the draft.

4 MR. KIM: This was done in February.

5 DR. ROSEN: Okay.

6 MR. HONCHARIK: And they submitted in
7 March.

8 DR. ROSEN: Thank you. That's all very
9 helpful.

10 MS. CORP: All right. The next section
11 4.3 dealt with metal fatigue. The reactor coolant
12 system components at Dresden and Quad Cities are
13 designed to Class 1 of the ASME Code. Design criteria
14 for fatigue analysis of ASME Class 1 requires the
15 cumulative usage factor to be less than 1, and all
16 components have projected cumulative usage factors of
17 less than 1 for the period of extended operation.

18 The staff had no open or confirmatory
19 items for this section of the SER.

20 Section 4.4 was the environmental
21 qualification. The applicant has adequately
22 identified the TLAA for EQ components, and the
23 applicant's EQ program was also consistent with GALL.
24 The staff concluded that the EQ program will continue
25 to manage equipment in accordance with 10 CFR 50.49

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1 and 10 CFR 54.21 (c)(1), Parts i, ii and iii.

2 There were no open or confirmatory items
3 for this section as well.

4 Section 4.5 was the pre-stress in concrete
5 containment tendons. None of the Dresden or Quad
6 Cities containments have prestressed tendons. As
7 such, this topic was not applicable to this
8 application, but it was a generic TLAA in GALL.

9 Section 4.6, fatigue of primary
10 containment, attached piping, and components: The
11 staff concludes that the TLAA's for this section remain
12 valid or the effects of aging on the intended
13 functions will be adequately managed for the extended
14 period of operation.

15 This includes suppression chamber vents
16 and downcomers, as well as the SRV discharge piping,
17 external suppression chamber, and such. Again, there
18 were no open or confirmatory items for this section.

19 Section 4.7 were other plant specific
20 TLAA's that were plant specific to Dresden and Quad
21 Cities. As you can see, they are listed there. I
22 won't go through them all. But the staff evaluated
23 them, and all demonstrated that the TLAA has been
24 projected to the end of the period of extended
25 operation, and there were no open or confirmatory

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1 items for these plant specific TLAA's.

2 DR. FORD: Earlier in the discussion,
3 Kimberley, we talked about the clamp that is used to
4 mitigate the cracking of the core shroud, and someone
5 said that the examination of that had been put into a
6 TLAA. Where here is that?

7 MS. CORP: Well, I think it was Section
8 4.7.2.2. Was that the drywell plates?

9 DR. FORD; No, no. This is the core
10 shroud.

11 MR. KIM; It's actually addressed -- It's
12 part of the first bullet on Slide Number 37. It is
13 included in the TLAA for reactor vessel and internals
14 neutron embrittlement.

15 MR. HONCHARIK: Yes. I think you are
16 talking about the reflood shock analysis for the core
17 shroud?

18 DR. FORD: Yes.

19 MR. HONCHARIK: 4.2.24, page 4-13.

20 MR. KIM: Of the staff's SER.

21 DR. FORD: Remind me. What period is that
22 bolt made of, that 12-foot bolt or whatever it is, the
23 bold material construction -- the clamp?

24 MR. KIM: The clamp.

25 MR. HONCHARIK: I think it is stainless

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1 steel. Is that correct?

2 MR. POLASKI: Yes.

3 DR. ROSEN: It's a 12-foot bolt. It goes
4 from the top to the bottom of the core shroud and
5 clamps onto the top and bottom to hold it together,
6 and you believe that you've got enough good J1-C data
7 for the bolt thread for stainless steel at those
8 fluence limits, end of life fluence limits?

9 If I remember rightly, the J1-C values for
10 those fluences is extremely scattered. What criteria
11 are you using as to how long you can continue to use
12 this clamp bolt?

13 MR. HONCHARIK: Well, I haven't reviewed
14 that part. So I'm not sure if I could answer that
15 question.

16 DR. FORD: This comes back to my original
17 concern. I always thought that this clamping device
18 was a quick fix where you came up with mitigating
19 actions if you have a long term whether it be weld
20 repair or whatever it was going to be, or replacement
21 of the core shroud.

22 So I was surprised when I learned that
23 this now an approved long term remedy. And if it is
24 an approved long term remedy, you better have some way
25 of monitoring its degradation. That's why I asked the

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1 question.

2 MR. KIM: Dr. Ford, we have to go back and
3 check.

4 MR. KUO: Dr. Ford, I think this is a
5 topic of the BWR VIP, but I don't know exactly the
6 number. We will come back to you.

7 DR. FORD: The other question, a
8 subsidiary question is that let's assume that this
9 bolt is relaxing by radiation induced creep. How much
10 cracking is there on the core shroud, the current core
11 shroud that we're trying to mitigate, and is it being
12 monitored?

13 DR. WALLIS: What about the tension in the
14 bolt?

15 DR. FORD: Well, that's what I'm saying.
16 You could relax fairly quickly. So then forget any
17 mitigation from that bolt. So then what risk have we
18 with the current cracks?

19 MR. POLASKI: This is Fred Polaski at
20 Exelon. I can't answer your specific question, but I
21 can tell you that BWR VIP is now considering those
22 clamps to be permanent fixes, and there are BWR VIP
23 inspections that are performed of them.

24 I can't answer the detailed questions
25 about what they inspect for and all the analysis, but

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1 that is -- Essentially, it is a long term permanent
2 fix at this point.

3 DR. FORD: Because it becomes somewhat
4 critical. We talked about the belt and suspenders
5 approach of using nobel chem and a clamp, but if now
6 you are saying, hey, we don't know how much
7 relaxations occurred in the bolt or whether the bolt
8 is cracking itself because of the stress concentration
9 in the bolt, and we get it PWRs. Why can't we get it
10 in a BWR?

11 So that's gone. So what sort of
12 mitigation do we have against those effects, and will
13 it last another 20 years or whatever the time period
14 is?

15 MR. KIM: That's what TLAA was supposed to
16 address. Will it last for another 20 years? But
17 we'll have to get back to you on your specific
18 questions.

19 MS. CORP: All right. That concludes the
20 TLAA analysis. The applicant has identified the
21 appropriate TLAA's and has demonstrated or is committed
22 to demonstrate that the TLAA's will either remain valid
23 for the period of extended operation, have been
24 projected to the end of the period of extended
25 operation, or the aging effects will be adequately

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1 managed for the period of extended operation.

2 With that, T.J. will conclude our
3 presentation.

4 MR. KIM: As a summary of the staff's
5 presentation, as I have alluded to earlier, from the
6 schedule standpoint we just received the applicant's
7 final response addressing all the open items and
8 confirmatory items and, as we mentioned earlier, we
9 are in the process of going through those.

10 We are looking at issuing the final SER
11 toward the end of July. July 26th, I believe is the
12 scheduled date for issuing final SER. About a month
13 from that point in time, we will be coming back to you
14 in a format of full Committee to address the status of
15 the open items and some of the items that came up
16 during the Subcommittee meeting.

17 DR. ROSEN: T.J., what is this last
18 bullet, 2.758? I'm not sure -- I know I don't know
19 what that is. Chapter 2?

20 MS. CORP: Oh, that was if there was any
21 intervention or --

22 DR. ROSEN: It's the Rules of Practice.
23 Right?

24 MS. CORP: Right. If there were any
25 contentions, and there were none raised for Dresden

1 and Quad Cities.

2 DR. WALLIS: Now Number 2, the first
3 thing, I'm just thinking about a member of the public
4 reading that. What they would like to read would be
5 there is reasonable assurance that no material
6 failures will occur or something like that. That's
7 what they would like to read. This is sort of vague
8 thing about activities will continue to be conducted
9 in accordance -- That's a very general, vague sort of
10 term, isn't it?

11 MR. KIM: Those words were crafted by our
12 lawyers.

13 DR. WALLIS: I know.

14 MR. KUO: If I may, these words are for
15 the overall conclusion. All the details of the
16 materials and aging effects and all that, hopefully,
17 have been all addressed in the SER.

18 DR. ROSEN: What you really mean is you
19 don't anticipate that there will be aging effects
20 which will affect the safety of the plant during the
21 next period of operation, whenever it is. That's what
22 you are really saying, isn't it?

23 DR. ROSEN: That's what it means, but if
24 you don't say it this way, you can't issue a license.

25 DR. WALLIS: But the impression given here

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1 is that it all depends upon human beings, when they
2 don't -- activities are conducted. I mean, people may
3 do things differently in 10 years. It's a very
4 strange way to put it, isn't it?

5 MR. KIM: It's right out of the Code.

6 DR. WALLIS: I know, but I'm just
7 thinking, if you put this in a newspaper, is it going
8 to reassure the public?

9 MR. KIM: We have to keep in mind, this is
10 a licensing action.

11 DR. WALLIS: I know, I know, I know.

12 DR. SIEBER: I'm not sure what newspaper
13 would print that.

14 MR. KIM: The Vermont Times. As I said
15 before, we do owe you some answers to some of the
16 questions that came up during the Subcommittee
17 meeting, and again we really appreciate all the
18 feedback that we received from the Subcommittee. I
19 think it's been very valuable.

20 CHAIRMAN LEITCH: Okay, thank you.

21 I think at this point we should go around
22 the room and ask the Committee if there are any
23 additional items. I mean, I don't think we need to
24 belabor the ones that we have already discussed, but
25 are there any additional items, comments, you would

1 like to make, particularly things that you want to
2 hear more about at the full Committee meeting?

3 So, Jack, do you want to start with that?

4 DR. SIEBER: Well, I'm satisfied with the
5 staff's conclusions in their write-ups. So I have no
6 additional requests to make.

7 CHAIRMAN LEITCH: William?

8 DR. SHACK: No, I can't think of anything.

9 CHAIRMAN LEITCH: Graham?

10 DR. WALLIS: No, I don't have any items.
11 I do think that -- Well, it has to be this way. We
12 spent a lot of time on sort of things which really
13 don't have that much effect on the safety of the
14 plant, and in order to keep reassuring the public,
15 there ought to be something that reflects that the big
16 issues have all been taken care of and we are just
17 nibbling at the fringes somehow. It has to come
18 through as a result of our deliberations, and I
19 suppose it does in our letter.

20 CHAIRMAN LEITCH: I wasn't sure I
21 understood you, Graham. You say you're not sure it
22 comes through in our letters?

23 DR. WALLIS: Well, I hope it does come
24 through in our letters, that the big issues have been
25 all taken care of, and all this time we spent on these

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1 -- you know, whether or not the bay in the building is
2 in scope and all that -- I mean, this is so far away
3 from the big issues that somehow -- The resolution of
4 all the big issues have got to come across.

5 CHAIRMAN LEITCH: Typically, our letters--

6 DR. WALLIS: There aren't any big issues.

7 CHAIRMAN LEITCH: -- draw the conclusion
8 that the renewal application should be renewed based
9 on you, and a lot of times it has a statement similar
10 to that one that you objected to. But those words
11 come out of the Code of Federal Regulations, and I
12 guess we have to --

13 DR. WALLIS: Well, there is a public out
14 there saying these things are getting older and older,
15 and we know all things eventually fall apart, and --

16 DR. SHACK: I thought we had a more
17 positive statements, that the aging management program
18 will manage degradation.

19 DR. WALLIS: That's right, we do, I think.

20 DR. SHACK: The one that says we'll just
21 conduct activities really does seem a little --

22 DR. BONACA: And I think you better start
23 with that comment, because I mean, that is really --
24 Typically, we bring out examples on the vessel, vessel
25 head, etcetera, for BWRs, because that's really where

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1 the issues are more significant.

2 I have a comment, by the way. If you look
3 at the AMP problems here like B-11 through B-19 or 10
4 and all about the vessel internals and other piping
5 systems and so on, all of them describe -- you know,
6 25 cracks here and cracks there, etcetera, etcetera,
7 which is a typical experience of BWRs in the Nineties.

8 You know, I know that there has been a lot
9 of improvement brought about by the BW VIP program,
10 and it will be interesting, I think, maybe for the
11 full Committee to give us a view of how you have dealt
12 with some situations, and I think the situation has
13 improved now. I mean, you have a lot of the cracking
14 issues are under control.

15 It will be an interesting -- you know,
16 even just a couple of moments to give a presentation
17 on what you have seen. You have four BWRs here. You
18 must have lived through a lot of these issues, and you
19 discussed some of them. I think that would be
20 interesting.

21 The other thing I would like to just say
22 again is the issue we discussed this morning of GALL
23 being so prescriptive. That is a separate issue from
24 Dresden and Quad Cities, but you know, it wills be
25 helpful if we can have some of this experience brought

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1 into GALL in a way that -- take minor exceptions, you
2 know, because again in this case I don't see that the
3 exceptions taken like on the fire piping system were
4 unreasonable. They were reasonable, but they were
5 following the very strict prescription of GALL that
6 says, you know, you shall inspect every two months,
7 I mean literally. Well, you know, why two months? In
8 some cases -- Well, anyway, that was the comment.

9 MR. KUO: This is really the goal of our
10 next update, actually to update the GALL. What we are
11 doing is that not only that we will incorporate all
12 the ISGs that have been approved so far, but we are
13 going to actually go into the past SERs, take out all
14 the past positions that the staff has approved and
15 that are not in GALL.

16 We will incorporate all that into GALL.
17 Hopefully, by doing that, we could provide, say, a
18 range of acceptance criteria. That way, actually, it
19 would make the review for the staff much easier for
20 the inspectors. They can do the job much better.

21 DR. BONACA: Sure, and you still have the
22 leverage to state additional expectations, should
23 there be a logic behind that. But in general, you
24 will have many less exceptions taken.

25 MR. KUO: Yes, that's what we are doing.

1 CHAIRMAN LEITCH: Peter?

2 DR. FORD: I agree with Graham. There's
3 nothing -- I haven't heard anything that says that
4 there is a safety issue here, but there are, as I have
5 said today, three material degradation problems which
6 could be very embarrassing if they are not resolved.

7 The first one is the question of my
8 concern about the applicability of the Rev. 2, the BWR
9 water chemistry guidelines. It does not apply to
10 Dresden and Quad Cities. They are using it, but I
11 think, a generic thing, it is a potentially
12 embarrassing situation.

13 The other one is the steam dryer and
14 whether it should be in scope or not, and the
15 veracity, if you like, of it being a non-safety
16 related item.

17 The third one is the details of this core
18 shroud clamp, which we don't seem to know anything at
19 all about. If in fact it does fail, again it would be
20 embarrassing.

21 Those are the three things that embarrass
22 me.

23 MR. KUO: And we will get back to the
24 Committee for all three issues.

25 DR. FORD: Thank you. That's it.

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1 CHAIRMAN LEITCH: Thank you. John?

2 MR. BARTON: I don't have any major
3 issues. I think this was a really well prepared
4 application, and the SER was very responsive.

5 The two issues that we didn't have answers
6 for -- and I'll give to Marvin to get to the staff.
7 We may want to hear the answers to those at the full
8 Committee meeting. That was the -- You know, for the
9 sake of having the documents accurate, you know, the
10 question on reactor building and closed cooling water
11 system, and also the instrument air situation.

12 If the staff would come back to the full
13 meeting and say how those things have been resolved,
14 I think. You know, there were some significant open
15 items which, according to what we heard today, are
16 just about closed out. So if the ACRS at its full
17 meeting is satisfied with the way the staff has closed
18 those out, I don't have any other major issues.

19 CHAIRMAN LEITCH: You were satisfied with
20 this seal leakage and --

21 MR. BARTON: Yes. I know what they are
22 doing, and I think that's about the best that you can
23 do if you are monitoring it.

24 CHAIRMAN LEITCH: Yes.

25 MR. BARTON: You know, other than going

1 and doing PTs and visuals on bellows and welds up in -
2 - and that's probably not practical. So I think their
3 program is satisfactory there.

4 DR. ROSEN: I just want to follow up on
5 Graham's comment about -- Graham Wallis' comment about
6 how exhausting this thing is and the level of detail
7 we go into, and the applicant and the staff, it's
8 true, have gone through a meticulous and extensive
9 effort here. It's just important that they do that,
10 painful as it is. And they did it well, and I think
11 it's good.

12 The only issue I would -- trying to focus
13 on the meat here, rather than making sure that the
14 scope is covered meticulously, the meat here is, to
15 me, this upper shelf energy question on Quad Unit 2.

16 It has a reasonable answer, but it is an
17 answer that the full Committee needs to hear. I
18 think, P.T., you have been typically providing a chart
19 that shows the screening criteria, and this one will -
20 - if you do that again, which, of course, you know I
21 like -- will jump right out at the full Committee and
22 will require this discussion to be full and complete.

23 MR. KUO: Okay, we will do it.

24 CHAIRMAN LEITCH: Marvin, did you have
25 anything?

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1 MR. SYKES: I have nothing else to add.

2 CHAIRMAN LEITCH: Okay. I really had
3 nothing to add except to thank all the presenters,
4 Exelon and the NRC staff, for their efforts and their
5 presentation today. I think it has been very useful.

6 Unless anyone else has anything to add, we
7 will adjourn one minute early.

8 (Whereupon, the foregoing matter went off
9 the record at 5:25 p.m.)

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CERTIFICATE

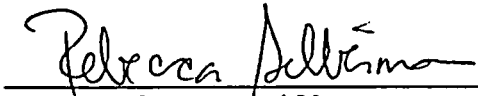
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Name of Proceeding: Advisory Committee on
Reactor Safeguards
Plant License Renewal
Subcommittee
Quad City Nuclear Power
Station

Docket Number: n/a

Location: Rockville, MD

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**Dresden Nuclear Power Station
Quad Cities Nuclear Power Station**

**Presentation to
Advisory Committee on Reactor Safeguards
Subcommittee on License Renewal**

Exelon Nuclear

April 14, 2004



Agenda

- Background Information - Bohlke
- Operating Experience / Extended Power Uprate - Bohlke
- Major Equipment Replacements / Repairs - Polaski
- Unique Scoping Topics - Stachniak
- Major Exceptions to GALL - Stachniak
- Commitment Management / Tracking - Polaski

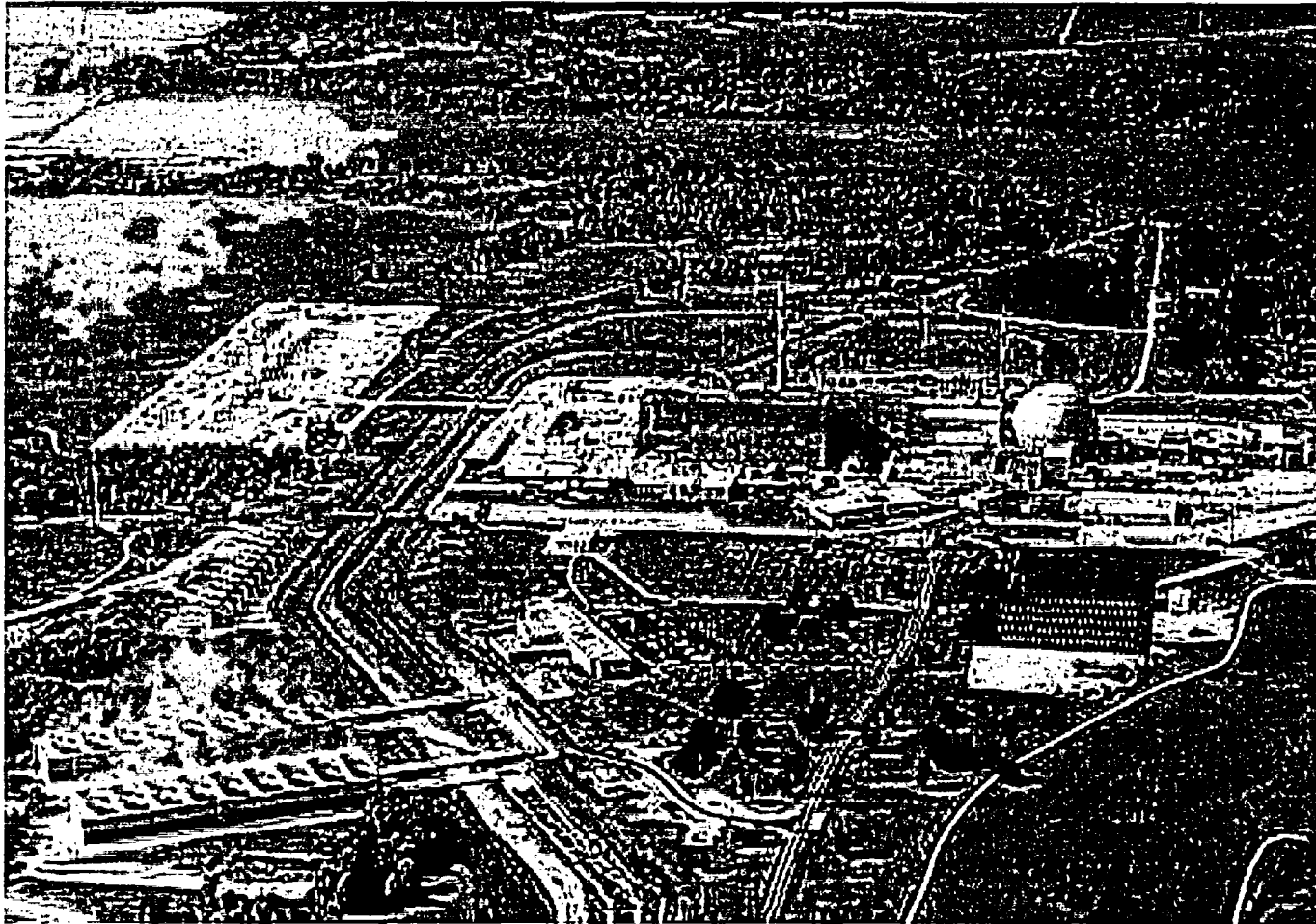
Application Background

- January 2003 – Application submitted
- November 2003– draft Quad Cities Supplemental Environmental Impact Statement issued
- December 2003 - draft Dresden Supplemental Environmental Impact Statement issued
- February 2004 – draft Safety Evaluation Report issued

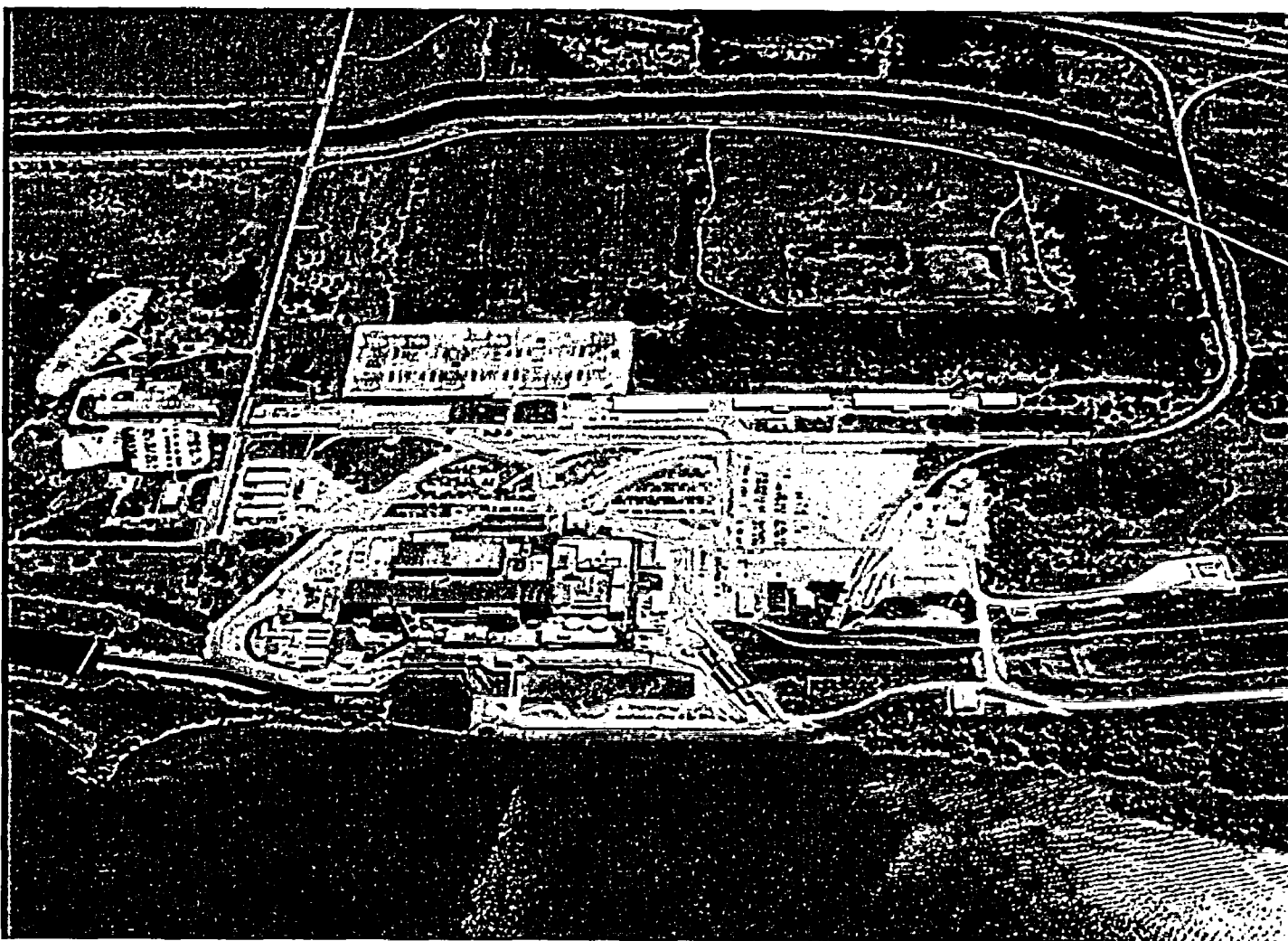
Plant Description

- General Electric BWR-3 with Mark I containment
- Fresh water cooling
- Licensed power level 2957 MWth
- Current Dresden licenses expire in 2009, 2011
- Current Quad Cities licenses expire in 2012
- Extended Power Upgrades completed in 2001, 2002

Dresden Nuclear Power Station



Quad Cities Nuclear Power Station



Significant Plant Differences

	<u>Dresden</u>	<u>Quad Cities</u>
Core isolation cooling	Isolation Condenser System	Reactor Core Isolation Cooling (RCIC) System
Residual heat removal	Shutdown Cooling System Low Pressure Coolant Injection System	Residual Heat Removal (RHR) System
	Containment Cooling Service Water System	RHR Service Water System
Appendix R shutdown	High Pressure Cooling Injection (HPCI) System Isolation Condenser System	HPCI System RCIC System Safe Shutdown Make-up Pump
Circulating water	Cooling lake and supplemental cooling towers (limited open cycle cooling in summer months)	Open cycle cooling using Mississippi River

Performance Indicators

- All Reactor Oversight Performance Indicators for both plants are Green except for Dresden Unit 3 HPCI unavailability, which is White

Plant Performance – 5 years

<u>Dresden</u>	1999	2000	2001	2002	2003
Capacity Factor	88.7	94.7	90.1	92.9	90.3
Refueling Outages	2	1	1	1	1
Refueling Outage length - days	25.5	17	19	19	28
Radiation Exposure - Rem per unit	289	144	192	183	194
<u>Quad Cities</u>	1999	2000	2001	2002	2003
Capacity Factor	93.6	90.8	94.9	85.9	90.6
Refueling Outages	0	2	0	2	0
Refueling Outage length - days		20.5		21	
Radiation Exposure - Rem per unit	92	447	73	883	233

Major Plant Modifications for EPU

- New high-pressure turbine rotors
- Condensate demineralizer system changes
 - prefilter system at Dresden
 - new demineralizer at Quad Cities
- Isolated phase bus duct cooling capacity increase
- Feedwater heater shell section replacements
- Steam dryer perforated plates (to reduce moisture carryover)
- Piping supports and related structural reinforcements
- Miscellaneous instrument/control setpoint changes
- Drywell structural steel reinforcements

Dresden Extended Power Uprate

<u>Unit</u>	<u>Implementation Date</u>	<u>Post EPU Capacity Factor</u>
Dresden 2	December 2001	94.0%
Dresden 3	November 2002	91.6%

- EPU modifications increased licensed power by 17%
- Post EPU Operating Experience
 - High frequency vibration on main turbine control valve EHC pressure switch caused half scram during Unit 2 startup
 - One Unit 2 RFP suction relief valve weld failed due to vibration during startup
 - Feedwater sample probe failure
 - Structural improvements to dryers resulting from Quad Cities lessons learned installed on both units
 - Dresden 2 continuous run 690 days

Quad Cities Extended Power Uprate

<u>Unit</u>	<u>Implementation Date</u>	<u>Post EPU Capacity Factor</u>
Quad Cities 2	March 2002	92.3%
Quad Cities 1	December 2002	89.5%

- EPU modifications increased licensed power by 17.8%
- Post EPU Operating Experience
 - Main steam low point drain line failed following Unit 2 startup March 2002
 - Unit 2 shutdown in July 2002 and June 2003 to repair degraded dryer
 - Unit 1 shutdown in November 2003 to repair degraded dryer
 - Vibration related damage discovered on 1 ERV during Nov 2003 outage
 - Unit 2 dryer damage discovered in March 2004 during refueling outage

Major Equipment Replacements

- Reactor water cleanup system piping replacement
- RHR service water system piping replacement (Quad Cities only)
- Reactor recirculation piping replacement (Dresden Unit 3 only)
- Main power transformer replacement
- Underground fire header replacement (Dresden only)
- Core shroud repairs
- Hydrogen water chemistry, zinc injection, and noble metals injection applied

Long Term Asset Management

- Exelon has a long term asset management plan in place
 - Updated yearly
 - Includes all Exelon Nuclear plants
 - Factors into long range budget planning
 - Complements our routine Preventive Maintenance and Performance Centered Maintenance
 - Provides basis for long term replacements

Examples of Equipment Replacements/Refurbishments

- Main generator rewind
- Main condenser tube replacements
- Plant process computer upgrades
- LP turbine rotor replacements
- Large motor replacements
- I&C system upgrades to digital

Dresden Fire Protection Scoping

- The Dresden Unit 2/3 fire protection system includes portions of the Dresden Unit 1 fire protection system, which are in the scope of the Maintenance Rule program. These include:
 - Underground fire protection supply header
 - Diesel fire pump and screen wash pumps
 - Unit 1 Cribhouse Building (houses the fire pump)
- No other Unit 1 equipment is used to support Units 2 and 3

Scoping of Non-Safety Related Piping

- Non-safety related pipe attached to safety related piping
 - Initial scoping included all attached non-safety related pipe and components up to the first support in each orthogonal direction
 - Scoping boundaries were later expanded to include pipe and components up to the first two supports in each orthogonal direction
- Spatial interaction of non-safety related piping
 - Initial scoping excluded non-safety related piping systems separated from safety equipment by more than 20 feet
 - The physical separation criterion has been abandoned. Exelon is currently assessing the impact that this methodology change will have on the original scoping results
 - Some previously excluded non-safety related systems have been brought into scope

Exceptions to GALL

- 38 of 47 aging management programs are related to GALL
- 18 programs are consistent with GALL
- 20 programs are consistent with exceptions
- All exceptions contain alternative aging management activities acceptable to the NRC
- Examples of exceptions:
 - BWR Penetration Inspection
 - Fuel Oil Chemistry
 - Inspection of Overhead Heavy Load Handling Systems

Below Grade Environment

Parameter	Aggressive limit	Dresden	Quad Cities
pH	< 5.5	7-9	6.9 – 7.9
Chlorides	> 500 ppm	5 – 30 ppm	≤ 29 ppm
Sulfates	> 1500 ppm	10 – 30 ppm	≤ 24 ppm

NRC Review Status

- Draft SER status:
 - 5 open items – 1 resolved and 4 under review
 - 16 confirmatory items – 15 resolved and 1 under review
 - Closure documentation has been provided to the NRC
- Inspection and Audit status
 - All technical issues have been resolved
 - A follow-up NRC regional inspection scheduled in May will confirm the adequacy of the action tracking system for license renewal commitments

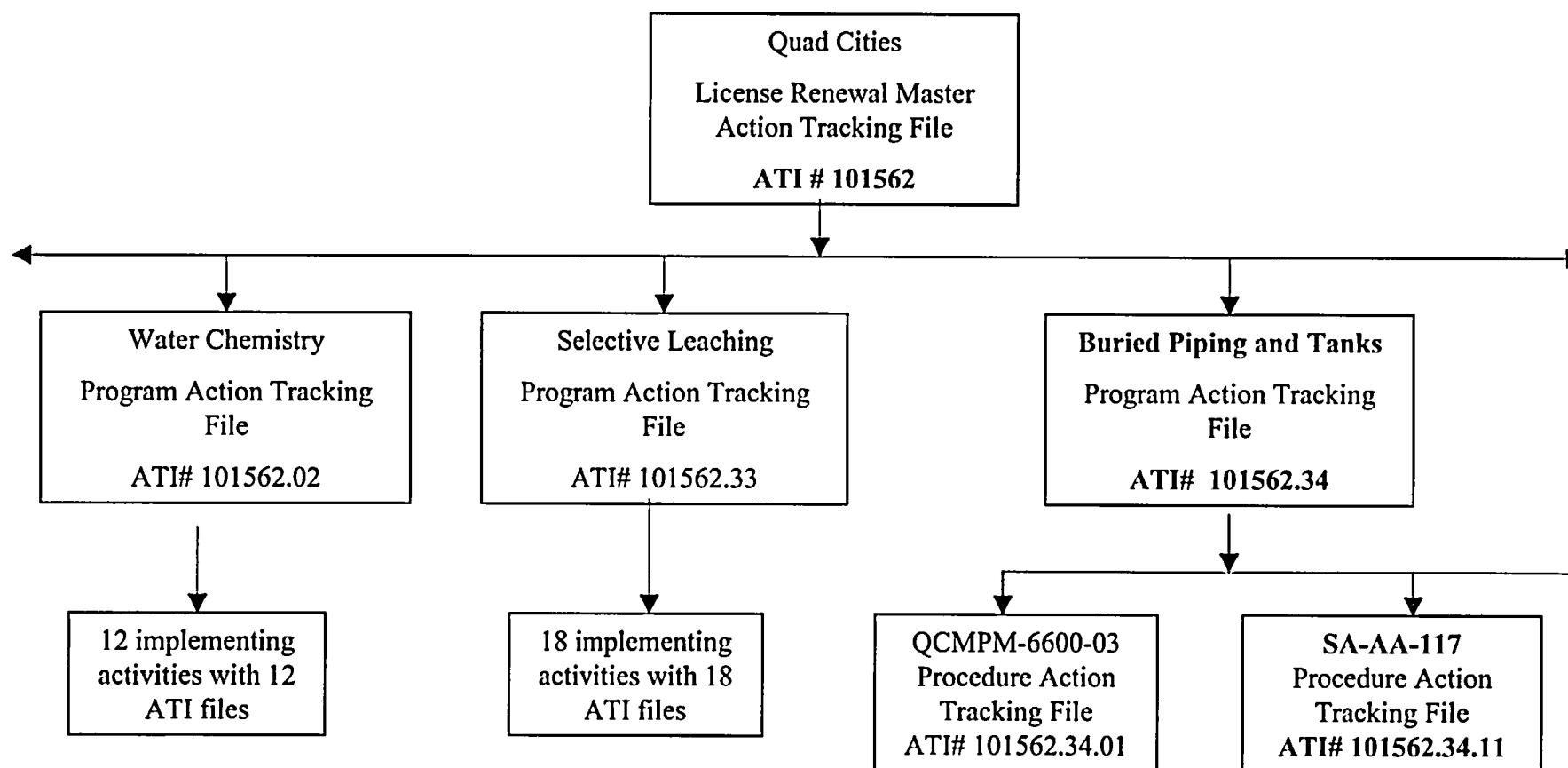
Commitment Management

- License renewal commitments are documented in the Exelon commitment tracking system
- The commitment tracking system is controlled by the Exelon commitment management process described in LS-AA-110, “Commitment Management”
- Exelon commitment management process is consistent with NEI 99-04, Rev 1, “Guidelines for Managing NRC Commitment Changes”, endorsed by the NRC
- Changes to a commitment require a formal review and evaluation
- Changes in commitments are provided to the NRC along with the Updated Final Safety Analysis Report revisions

License Renewal Commitments

- A unique commitment tracking number has been created for each Aging Management Program and a tracking file has been created for each procedure, work request, and periodic surveillance credited for license renewal
- Aging management programs are comprised of implementing procedures, work requests, and periodic surveillances that implement activities of a program
- Steps contained in procedures, work requests, and periodic surveillances that implement license renewal commitments are annotated as license renewal commitments and are tracked on a station specific basis

Commitment Tracking File Structure



Example - Procedure Annotation

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The following step was annotated as license renewal commitments in Exelon procedure, SA-AA-117, "Excavation, Trenching, and Shoring"

4.7 Exposing Underground Piping, Structural Steel or Concrete During Excavation (CM-2, CM-3, CM-4, CM-5, CM-6)

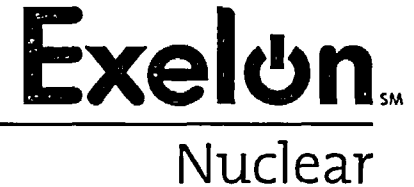
4.7.1 If underground piping, structural steel or concrete is exposed during excavation, Then PERFORM the following:

1. NOTIFY Engineering to inspect piping, structural steel or concrete for evidence of coating degradation or corrosion, concrete cracking or spalling, signs of corrosion in steel.
2. Engineering INSPECT piping or structural steel for evidence of coating degradation (if coated pipe or steel components) or corrosion (if uncoated metal pipe or steel components). Engineering INSPECT concrete components for cracking or spalling. RECORD results of inspections in ACTION TRACKING and record the Action Tracking Number In the Comments Section of the Excavation Permit.

References:

- | | |
|-------|--|
| 6.1. | Commitments |
| 6.1.1 | Limerick
(CM-1) A/R# A0789662, (LGS) LER
1-93-011 (T02973) |
| 6.1.2 | Peach Bottom
(CM-2) PBAPS License Renewal Outdoor,
Buried, and Submerged Component
Inspection Activities (T04329) (Step 4.7) |
| 6.1.3 | Dresden
(CM-3) Action Tracking Item AR
00101522.34.15, License Renewal Aging
Management – NUREG – 1801 "Generic
Aging Lessons (GALL) Report, Section
XI.M34 Buried Piping and Tanks
Inspections. (Step 4.7)
(CM-6) Action Tracking Item AR
00101522.40.12, License Renewal Aging
Management – NUREG – 1801 "Generic
Aging Lessons (GALL) Report, Section
XI.S6 Structures Monitoring Program.
(Step 4.7) |
| 6.1.4 | Quad Cities
(CM-4) Action Tracking Item AR
00101562.34.11, License Renewal Aging
Management – NUREG – 1801 "Generic
Aging Lessons (GALL) Report, Section
XI.M34 Buried Piping and Tanks
Inspections. (Step 4.7) |

Procedure Action Tracking File



ATI # 101562.34.11 – Quad Cities

The following commitment(s) was/were made in the application for the renewed Operating License per 10 CFR 54 and will need to be carried forward into future revisions or subsequent procedures superceding SA-AA-117, "Excavation, Trenching, and Shoring."

Note:

The commitment cannot be changed without prior approval from the appropriate individual(s) associated with aging management (License Renewal) compliance. Any deletions or changes to this commitment shall be made in accordance with LS-AA-110, Commitment Management.

Commitment:

Periodic inspections of buried piping and tanks to manage the effects of corrosion are performed when the opportunity arises. Inspections are performed utilizing procedures SA-AA-117, Excavation, Trenching, and Shoring, and ER-MW-450, Structures Monitoring, whenever said components are excavated during station yard area maintenance or general yard excavations to detect coating or base metal degradation

Basis for Commitment:

This procedure is credited in AMR M08, Appendix IV XI.M34 (Elements 3, 4, 5, 6, 7).

References:

Letter to Nuclear Regulatory Commission from Jefferey A. Benjamin, Quad Cities Nuclear Power Station, Units 1 and 2, Dresden Nuclear Power Station, Units 2 and 3, Application for Renewed Operating Licenses, dated January 3, 2003. License Renewal Application (LRA), Appendix A, Section A.1.25 and Appendix B, Section B.1.25

Parent Action Tracking Number 101562.34

Program Action Tracking File

ExelonSM

Nuclear

Action Tracking Number
101562.34 – Quad Cities

ATI # 101562.34

B.1.25 Buried Piping and Tanks Inspection

Introduction

Appendix A and B of the Dresden/Quad Cities License Renewal Application (D/QC LRA) identify all activities that are credited for aging management of passive, long-lived components and structures within the scope of license renewal. Specifically, section A.1.25 of Appendix A and section B.1.25 of Appendix B describe aging management activities credited for components exposed to soil and/or groundwater. This action tracking file documents those activities credited as part of the Buried Piping and Tanks Inspection aging management program (AMP) that has been credited for the aging management of component external surfaces exposed to a soil and groundwater environment.

The aging mechanisms and aging effects associated with those component external surfaces falling within the scope of license renewal exposed to a soil and groundwater environment is contained in Aging Management Report (AMR), M08, External Environments. This AMR along with the license renewal application can be found in the electronic data management system (EDMS) for reference.

aging management activities credited for components exposed to soil and/or groundwater.

The scope of components included in the Buried Piping and Tanks Inspection AMP activities include buried ferrous portions of the diesel fuel oil systems and storage tanks, fire protection system piping, circulating water (ultimate heat sink) system piping, condensate/CCST system piping, and demineralized water system piping. It also includes buried mechanical joint rubber gaskets contained in the fire protection piping. The ferrous components are constructed from the materials included in the following aging mechanism listing, and are subject to a "Loss of Material" aging effect. Rubber mechanical joint materials are subject to a "Change in Material Properties" aging effect.

Material	Aging Mechanism
Carbon steel	General corrosion, pitting corrosion, crevice corrosion and MIC
Cast iron	General corrosion, pitting corrosion, MIC and selective leaching (B.1.24, Selective Leaching of Materials, is utilized in conjunction with B.1.25 to address selective leaching)
Ductile iron	General corrosion, pitting corrosion, crevice corrosion and MIC
Stainless steel	Pitting corrosion, crevice corrosion and MIC
Rubber	Elastomer degradation and loss of resiliency

buried ferrous portions of the diesel fuel oil systems and storage tanks, fire protection system piping, circulating water (ultimate heat sink) system piping, condensate/CCST system piping, and demineralized water system piping. It also includes buried mechanical joint rubber gaskets contained in the fire protection piping.

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At Quad Cities, yard excavation activities to date have not uncovered buried piping or tanks due to their locations and depths of the specific routings. Since inspections during periodic uncovering of buried components cannot solely be relied upon for providing effective degradation aging management, other inspection and testing activity license renewal commitments have been credited.

The Buried Piping and Tanks Inspection AMP activities provide for managing the "Loss of Material" (for both ferrous and asbestos concrete) and the "Change in Material Properties" aging effects through the use of piping and component coatings and wrappings, periodic inspections, and pressure testing.

Commitments

Exelon has committed to implement a Buried Piping and Tanks Inspection AMP that is consistent with the program described in Section XI.M34 of NUREG 1801, Generic Aging Lessons Learned Report, dated April 2001 with the following one exception:

NUREG-1801 indicates that buried piping and tanks are inspected when they are excavated during maintenance. NUREG-1801 also indicates that because the inspection frequency is plant-specific and also depends on plant operating experience, the inspection frequency requires

further evaluation.

Inspections of Quad Cities buried components uncovered due to maintenance cannot be relied upon as the sole method for providing effective aging management because uncovering of piping or tanks during maintenance is not likely. Therefore, the Quad Cities AMP as enhanced includes the use of piping and component coatings and wrappings, periodic pressure testing, buried tank leakage checks, inspections of buried tank internal surfaces, and inspections of the ground above buried tanks and piping. It also includes a one-time internal UT inspection of one buried steel tank, and a one-time visual inspection of the external surface of a buried piping section.

The following Buried Piping and Tanks Inspection AMP activities, sorted by coatings and wrappings, periodic inspections, and pressure testing, comprise the commitments for this AMP:

Coatings and Wrappings

Coatings and wrappings on buried ferrous piping and tanks perform a mitigative function by preventing metal contact with the aggressive soil/groundwater. All buried carbon steel piping at Quad Cities was in the past, and will continue to be, coated prior to installation or after maintenance. This determination is based upon two facts: 1) The original and current installation specifications applicable for Quad Cities buried piping (R-2329 and R-4411, Section 1501.10) require an external coating on buried carbon steel piping, and 2) There has been no failure history at Quad Cities of buried carbon steel piping attributed to the absence of an external coating on the piping.

managing the "Loss of Material" (for both ferrous and asbestos concrete) and the "Change in Material Properties" aging effects through the use of piping and component coatings and wrappings, periodic inspections, and pressure testing.

Coatings and Wrappings

Program Action Tracking File

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Periodic Inspections

•Periodic inspections of buried piping and tanks to manage the effects of corrosion are performed when the opportunity arises. Inspections are performed utilizing procedures SA-AA-117, Excavation, Trenching, and Shoring, and ER-MW-450, Structures Monitoring, whenever said components are excavated during station yard area maintenance or general yard excavations to detect coating or base metal degradation (AT Nos. 101562.34.11, 101562.34.13).

•Periodic inspections of the inside of buried tanks will be performed. Quad Cities procedure QCMPM 6600-03, Diesel Oil storage Tank Cleaning, and predefines 15839-02, 23085-03 direct the cleaning and visual inspection of the inside surfaces of the fuel oil storage tanks. These visual inspections will also detect thru-wall degradation penetrating from the exterior surfaces of the tanks (AT Nos. 101562.34.01, 101562.34.08, 101562.34.10).

•A one-time UT inspection of the internals of one buried fuel oil storage tank to detect loss of material will be performed utilizing work order 592920. In addition to verifying the effectiveness of the current fuel oil chemistry control program, it will also identify wall thinning caused by a loss of material originating from the exterior surfaces of the tank (AT No. 101562.34.06).

Periodic Inspections

Inspections of the ground above buried commodities are performed, utilizing procedure ER-MW-450, Structures Monitoring, for indications of below-ground seepage or ground settling (AT No. 101562.34.13).

A one-time inspection of a section of buried ductile iron fire protection piping, including a mechanical joint, will be performed, if determined to be necessary (see NOTE below). The inspection will examine the piping surface for coating and base metal degradation, and the mechanical joint for evidence of minor leakage or other indications of a lack of joint integrity (AT Nos. 101562.34.05, 101562.34.14).

NOTE

This inspection is only required if excavation inspections as specified in AT Nos. 101562.34.11, 101562.34.13 above do not occur prior to 12/14/10 (Two years prior to the expiration of both Quad Cities Units 1 & 2 current term licenses).

Pressure Testing

Periodic pressure testing of buried cooling water piping is accomplished utilizing ISI pressure testing of Class 3 buried cooling water piping, performed in accordance with ER-AA-330-001, Section XI Pressure Testing. The rate of pressure loss or change-in-flow between the ends of the buried components is utilized as the VT-2 visual examination for the buried piping and components (AT No. 101562.34.12).

Pressure Testing

Presentation Summary



ACRS License Renewal Subcommittee

Dresden and Quad Cities Nuclear Power Station License Renewal Application

Safety Evaluation Report with Open Items
April 14, 2004

TJ Kim
Senior Project Manager

Kimberley Corp
Project Manager

Overview

- Exelon submitted its application for Dresden and Quad Cities by letter dated January 3, 2003
- General Electric BWR/type 3 reactor, Mark I containment
 - generates 2957 megawatt thermal at both Dresden and Quad Cities
 - generates 850 and 855 megawatt electrical at Dresden and Quad Cities, respectively
- Location of Stations
 - Dresden is on the Illinois and Kankakee Rivers in Grundy County, Illinois.
 - Quad Cities is on the Mississippi River 3 miles north of Cordova, Rock Island County, Illinois.

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Overview continued

- Current licenses expire
 - Dresden Unit 2 – December 22, 2009
 - Dresden Unit 3 – January 12, 2011
 - Quad Cities Units 1 & 2– December 14, 2012
- Request license renewal through
 - December 22, 2029 for Dresden Unit 2
 - January 12, 2031 for Dresden Unit 3
 - December 14, 2032 for Quad Cities Units 1 & 2
- Application implemented the generic aging lessons learned (GALL) process

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NRC Review Process

- 5 Open Items (1 resolved, 3 under review, 1 waiting applicant response)
- 16 Confirmatory Items (15 resolved, 1 under review)
- Brought into scope and subjected to AMR
 - Several new systems and components
- 4 new AMPs

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NRC Audits and Inspections

- Scoping and Screening Methodology Audit
 - May 19-23, 2003
- Scoping and Screening Inspection
 - July 28 – August 1, 2003 (Exelon Headquarters)
- Aging Management Program Audit
 - October 7-8, 2003
- Aging Management Review Inspection
 - September 29 – October 3, 2003 (Dresden)
 - October 14-17, 2003 (Quad Cities)
- Optional Third Inspection
 - March 15-17, 2004

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Section 2 – Structures & Components Subject to an AMR

2.1 – Scoping and Screening Methodology

- Describes methodology used to identify SSCs that are within the scope of the license renewal rule and subject to an AMR
- Staff audit determined that the applicant's methodology satisfies the rule
- 2 Open Items (1 waiting applicant response, 1 under staff review)

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Open Item

■ OI – 2.1-1

- The staff identified that there was not sufficient basis for limiting consideration of fluid spray interactions to only those non-safety related SSCs located within 20 ft of an active safety related SSCs.
- Resolution – The applicant has decided not to take the 20 ft exception and has scoped in all systems and components. Applicant is still evaluating the systems and components to be scoped in with new methodology.

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Open Item

■ OI-50-237/03-04-01, 50-249/03-04-01, 50-254/03-04-01, and 50-266/03-04-01

- The staff identified the need for clarification of the definition of an equivalent anchor as used to determine the extent of non-safety related attached to safety related systems that was included within the scope of license renewal.
- Resolution – Currently under review by NRR and RIII staff.

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Section 2 – Structures & Components Subject to an AMR continued

Section 2.2 – Plant Level Scoping Results

- Staff reviewed Section 2.2 to determine if any systems, structures or commodities required to be within scope were omitted.
- No Open or Confirmatory Items

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Section 2 – Structures & Components Subject to an AMR continued

Section 2.3 – Scoping and Screening of Mechanical Systems

- Includes the following systems:
 - Reactor Vessel, Internals, and Reactor Coolant System
 - Engineered Safety Features Systems
 - Auxiliary Systems
 - Steam and Power Conversion Systems
- No Open or Confirmatory Items

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Steam Dryers/EPU

- Steam dryers are generally not in scope for license renewal according to the rule.
- Staff has determined that Quad Cities and Dresden are unique among other operating BWRs.

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Section 2 – Structures & Components Subject to an AMR continued

Section 2.4 – Structures and Structural Components

- Describes structures and structural components
 - Containment
 - Other Structures (15)
- No Open or Confirmatory Items

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Section 2 – Structures & Components Subject to an AMR continued

Section 2.5 – Electrical and Instrumentation and Controls

- These components were evaluated on a plant-wide basis utilizing the “spaces” approach
 - 3 commodity groups
- No Open or Confirmatory Items

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Scoping and Screening Summary

- Scoping and screening methodology is adequately described and justified in the LRA and satisfies the requirements of 10 CFR 54.21(a)(2).
- Scoping and screening review results found that the SSCs within the scope of license renewal have been identified, as required by 10 CFR 54.4(a) and those subject to an AMR have been identified, as required by 10 CFR 54.21(a)(1).

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License Renewal Inspections

Highlights:

- Scoping and Screening Inspection
- Aging Management Review Inspection
- Plant ROP

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License Renewal Inspection Program Implementation

- License Renewal Manual Chapter–MC2516
- License Renewal Inspection Procedure–IP71002
- Site-specific inspection plan for each applicant
- Scheduled to support NRR's review
- Resources – regional inspection personnel

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License Renewal Inspections

Scoping and Screening Inspection

- Objective: to confirm that the applicant has included all appropriate SSCs in the scope of license renewal as required by the rule
- One week in length
- Conducted July 28 – August 1, 2003 at Exelon Headquarters

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License Renewal Inspections continued

Scoping and Screening Inspection Results

- Scoping and screening process was successful in identifying those SSCs needing aging management review

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License Renewal Inspections continued

Aging Management Review Inspection

- Objective: to confirm that existing AMPs are managing current age related degradation
- Two weeks in length
- Conducted September 29 – October 3, 2003 at Dresden and October 14-17, 2003 at Quad Cities

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License Renewal Inspections continued

AMR Inspection Results

- Material condition of plant was being adequately maintained. No significant aging related issues were identified.
- Documentation was of good quality, detailed, and understandable.
- Third Optional Inspection conducted March 15-17, 2004. An additional follow-up inspection will be conducted in May/June 2004

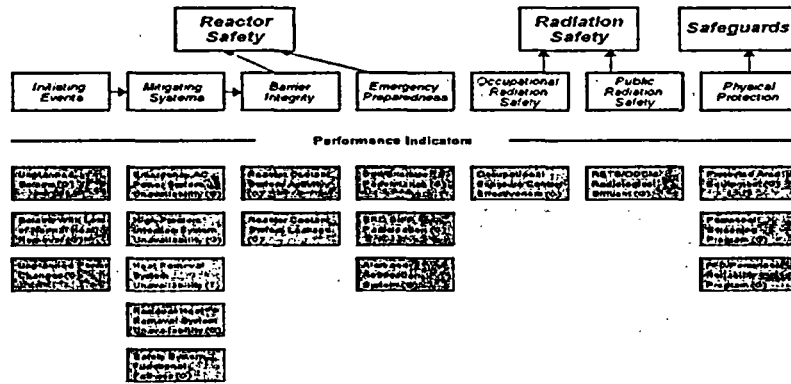
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Dresden 2

4Q/2003 Performance Summary



Last Modified January 23, 2004

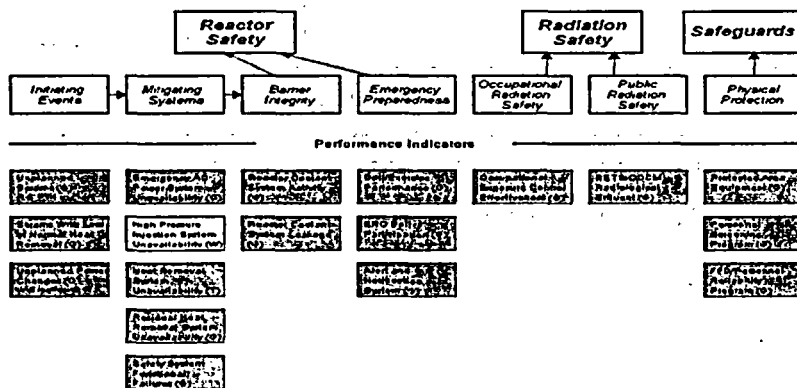
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Dresden 3

4Q/2003 Performance Summary



Last Modified: January 23, 2006

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Section 3 – Aging Management Review

GALL divides systems and structures into 6 broad system/structural groups

- Reactor Vessel, Internals, and Reactor Coolant System (Section 3.1)
- Engineered Safety Features Systems (Sections 3.2)
- Auxiliary Systems (Section 3.3)
- Steam and Power Conversion Systems (Section 3.4)
- Containments, Structures and Component Supports (Section 3.5)
- Electrical and Instrumentation and Controls (Section 3.6)

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Aging Management Programs

Aging Management Programs

- 47 AMPs credited for license renewal
 - 18 common AMPs
 - 29 system/structural group-specific AMPs
- 18 AMPs consistent with GALL/consistent with enhancements
- 20 AMPs consistent with GALL, with exceptions
- 9 AMPs non GALL
- 4 new AMPs added – 3 system specific and 1 common
- 1 Open Item and 5 Confirmatory Items (all resolved)

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AMP Audit

- Date of audit – October 7-8, 2003
- Auditors - 4 Project managers from license renewal, 1 Regional inspector and 5 Contractors
- Concluded AMPS were consistent with GALL except:
 - Three AMPs were revised by making enhancements to the programs for review by the technical staff. The staff found them acceptable.

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Section 3 – Aging Management Review continued

Section 3.1 – Reactor Vessel, Internals and Reactor Coolant Systems

- 5 Confirmatory Items (4 resolved and 1 under review)

Section 3.2 – Engineered Safety Features System

- No Open or Confirmatory Items

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Section 3 – Aging Management Review continued

Section 3.3 & 3.4 – Auxiliary Systems & Power Conversion Systems

- 1 Open (AMP Open Item) and 2 Confirmatory Items (all items resolved)

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Open Items

One-Time Inspection – Auxiliary System: Plant Heating System

■ OI-B.1.23-2

- The staff identified that additional information needs to be provided on the environmental conditions and the operating experience in order to justify the use of a one-time inspection, or provide periodic inspections for these components
- Resolution – Staff has received applicable information and is incorporating into the final SER.

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Open Items continued

One-Time Inspection – Steam and Power Conversion: Main Steam

■ Ol-B.1.23-2 continued

- The staff identified that additional information needs to be provided to justify the use of a one-time inspection.
- Resolution – Staff has received applicable information and is incorporating into the final SER.

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Section 3 – Aging Management Review continued

Section 3.5 – Containment, Structures, and Component Supports

- Containment structure
- 15 other structures
- 1 Open Item (under review)

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Open Item

ASME Section XI, Subsection IWF

■ OI-3.5.2.3.2-1

- The staff identified that the existing IWF program is not consistent with GALL in that it does not include the inspection of Class MC supports
- Resolution – Currently under review by NRR staff

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Aging Management of In-Scope Inaccessible Concrete

	Aggressive Limit	Dresden	Quad Cities
pH	< 5.5	7-9	6.9 - 7.9
Chlorides	> 500 ppm	5 - 30 ppm	< 29 ppm
Sulfates	> 1500 ppm	10 - 30 ppm	< 24 ppm

- Periodic testing to verify chemistry remains non-aggressive
- Below grade soil/water environment non-aggressive

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Section 3 – Aging Management Review continued

Section 3.6 – Electrical and Instrumentation and Controls

- 3 Component commodity groups subject to AMR
 - electrical cables and connections
 - bus ducts
 - high voltage transmission conductors and insulators
- No Open or Confirmatory Items

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Aging Management Review Summary

- Aging management review found that the applicant has demonstrated that the effects of aging will be adequately managed so that the intended function(s) will be maintained consistent with the current licensing basis for the period of extended operation, as required by 10 CFR 54.21(a)(3)

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Section 4 – Time-Limited Aging Analyses

- Reactor Vessel and Internals Neutron Embrittlement
- Metal Fatigue
- Environmental Qualification
- Loss of Prestress in Concrete Containment Tendons
- Fatigue of Primary Containment, Attached Piping and Components
- Other Plant-Specific TLAAS

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Section 4 – TLAAs continued

Section 4.2 – Reactor Vessel and Internals Neutron Embrittlement

- Seven analysis affected by irradiation embrittlement identified as TLAAs
 - Reactor Vessel USE
 - Pressure-Temperature Limits
 - 5 other neutron embrittlement related TLAAs
- 1 Open Item (under staff review)
- 4 Confirmatory Items (resolved)

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Reactor Vessel Upper Shelf Energy (USE)

Reactor Vessel Beltline Material	Screening Criteria USE (FT-LBS)	Staff Calculated USE (FT-LBS) Dresden		Staff Calculated USE (FT-LBS) Quad Cities	
		Unit 2	Unit 3	Unit 1	Unit 2
Limiting Beltline Plate Material	≥ 50	75	77	76	80
Limiting Weld	≥ 35 (EMA)*	49	47	49	34**

* EPRI Topical Report – 113596 demonstrated that welds with Charpy USE values of 35 ft-lbs can have margins of safety against fracture equivalent to those required by Appendix G, Section XI of the ASME Code; therefore acceptable.

** Open Item – Plant specific equivalent margin analysis (EMA) is being prepared by the applicant for a weld with a Charpy USE less than 35 ft-lbs.

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Pressure/Temperature Curves

- The applicant will submit P-T curves for the period of extended operation for approval before the current license expires
- Technical specifications will be updated as required by Appendix G of 10 CFR 50

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Section 4 – TLAAAs continued

Section 4.3 – Metal Fatigue

- ☑ Reactor coolant system components at Dresden and Quad Cities designed to Class 1 of the ASME Code
- ☑ All components have projected cumulative usage factor (CUF) < 1.0 for the period of extended operation
- ☑ No Open or Confirmatory Items

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Section 4 – TLAAAs continued

Section 4.4 – Environmental Qualification

- ☑ Applicant has adequately identified the TLAA for EQ components
- ☑ Applicant's EQ Program is consistent with GALL
- ☑ Staff concluded EQ Program will continue to manage equipment in accordance with 10 CFR 50.49, and meets 10 CFR 54.21(c)(1)(i), (ii), and (iii)
- ☑ No Open or Confirmatory Items

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Section 4 – TLAAAs continued

Section 4.6 – Fatigue of Primary Containment, Attached Piping, and Components

- ☐ The staff concludes that the TLAAAs for this section remain valid or the effects of aging on the intended functions will be adequately managed for the extended period of operation.
- ☐ No Open or Confirmatory Items

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Section 4 – TLAAAs continued

Section 4.7 – Other Plant-Specific TLAAAs

- ☐ Reactor Building Crane Load Cycles
- ☐ Metal Corrosion
- ☐ Crack Growth Calculation of a Postulated Flaw in the Heat Affected Zone of an Arc Strike in the Suppression Chamber Shell
- ☐ Radiation Degradation of Drywell Shell Expansion Gap Polyurethane Foam
- ☐ High-Energy Line Break Postulation Based on Fatigue Cumulative Usage Factor
- ☐ All demonstrate that the TLAA has been projected to the end of the period of extended operation
- ☐ No Open or Confirmatory Items

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TLAA Summary

- ☐ The applicant has identified the appropriate TLAA's and has demonstrated or is committed to demonstrate that the TLAA's:
 - ☐ Will remain valid for the period of extended operation
 - ☐ Have been projected to the end of the period of extended operation, or
 - ☐ The aging effects will be adequately managed for the period of extended operation

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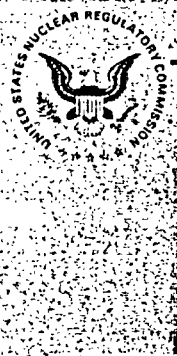
Staff Conclusions

- Pending the resolution of the 5 Open and 16 Confirmatory Items, the Applicant has met the requirements for license renewal, as required by 10 CFR 54.29:
- ☐ Actions have been identified and have been or will be taken such that there is reasonable assurance that activities will continue to be conducted in the renewal term in accordance with the current licensing basis
 - ☐ The applicable requirements of 10 CFR Part 51 have been satisfied
 - ☐ Matters raised under 10 CFR 2.758 have been addressed

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ACRS License Renewal Subcommittee

**Dresden and Quad Cities
Nuclear Power Station
License Renewal Application**

**Safety Evaluation Report with Open Items
April 14, 2004**

**TJ Kim
Senior Project Manager**

**Kimberley Corp
Project Manager**